

# SHARP

## SUPPLEMENTAL SERVICE MANUAL

KB-3411JS  
KB-3411JK  
KB-3411JW

S25R247KB341J



KB-3411JS pictured

### FREE STANDING RANGE WITH MICROWAVE DRAWER

MODELS **KB-3411JS**  
**KB-3411JK**  
**KB-3411JW**

This is a supplemental Service Manual and is quite similar to the base models KB-3300JS/JK/JW; (S74R243KB330J). This supplemental manual must be used in conjunction with the base model service manual for complete operation, service, safety and replacement parts information.

#### WARNING TO SERVICE PERSONNEL:

**This service manual is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. Sharp Electronics Corporation cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this manual.**

**Microwave ovens contain circuitry capable of producing very high voltage and current. Contact with the following parts may result in a severe, possibly fatal, electrical shock. (High Voltage Capacitor, High Voltage Power Transformer, High Voltage Rectifier and Heat sink etc., and Magnetron, High Voltage Harness etc..)**

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## SHARP ELECTRONICS CORPORATION

This document has been published to be used for after sales service only. The contents are subject to change without notice.

## **PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY**

- (a) Do not operate or allow the oven to be operated with the door open.
- (b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
- (c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
- (d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
- (e) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

## **BEFORE SERVICING**

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.

If microwave emissions level is in excess of the specified limit, contact SHARP ELECTRONICS CORPORATION immediately @1-800-237-4277.

If the unit operates with the door open, service person should 1) tell the user not to operate the oven and 2) contact SHARP ELECTRONICS CORPORATION and Food and Drug Administration's Center for Devices and Radiological Health immediately.

Service personnel should inform SHARP ELECTRONICS CORPORATION of any certified unit found with emissions in excess of  $4\text{mW}/\text{cm}^2$ . The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

# WARNING TO SERVICE PERSONNEL

Range units contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock.

(Example)

High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness, Heating Elements, etc..

Read the Service Manual carefully and follow all instructions.

## Before Servicing



1. Disconnect the power supply cord , and then remove cabinet.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.

### **WARNING: RISK OF ELECTRIC SHOCK. DISCHARGE THE HIGH-VOLTAGE CAPACITOR BEFORESERVICING.**

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Whenever troubleshooting is performed the power supply must be disconnected. It may, in some cases, be necessary to connect the power supply after the outer case has been removed, in this event:

1. Disconnect the power supply cord, and then remove necessary covers.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

### **When the testing is completed,**

1. Disconnect the power supply cord, and then remove covers.
2. Open the drawer and keep it open.
3. Discharge high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the covers.
6. Reconnect the power supply cord.
7. Run the unit and check all functions.

### **After repairing**

1. Reconnect all leads removed from components during testing.
2. Reinstall the covers.
3. Reconnect the power supply cord.
4. Run the oven and check all functions.

Microwave ovens should not be operated empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven tray, close the drawer and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out **Before Servicing** procedure and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.

## SAFE SERVICING PRACTICES

To avoid personal injury and/or property damage, it is important that Safe Servicing Practices be observed. The following are some limited examples of safe practices:

1. DO NOT attempt a product repair if you have any doubts as to your ability to complete it in a safe and satisfactory manner.
2. Before servicing or moving an appliance:
  - Remove the power cord from the electrical outlet, trip the circuit breaker to the OFF position, or remove the fuse.
3. Never interfere with the proper operation of any safety device.
4. USE ONLY REPLACEMENT PARTS CATALOGED FOR THIS APPLIANCE. SUBSTITUTIONS MAY DEFEAT COMPLIANCE WITH SAFETY STANDARDS SET FOR HOME APPLIANCES.
5. GROUNDING : The standard color coding for safety ground wires is GREEN , or GREEN with YELLOW STRIPES . Ground leads are not to be used as current carrying conductors. It is EXTREMELY important that the service technician reestablish all safety grounds prior to completion of service. Failure to do so will create a hazard.
6. Prior to returning the product to service, ensure that:
  - All electrical connections are correct and secure
  - All electrical leads are properly dressed and secured away from sharp edges, high-temperature components, and moving parts
  - All non-insulated electrical terminals, connectors, heaters, etc. are adequately spaced away from all metal parts and panels
  - All safety grounds (both internal and external) are correctly and securely connected
  - All panels are properly and securely reassembled

### ATTENTION!!!

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## MICROWAVE MEASUREMENT PROCEDURE

### A. Requirements:

- 1) Microwave leakage limit (Power density limit): The power density of microwave radiation emitted by a microwave oven should not exceed  $1\text{ mW/cm}^2$  at any point 5cm or more from the external surface of the oven, measured prior to acquisition by a purchaser, and thereafter (through the useful life of the oven),  $5\text{ mW/cm}^2$  at any point 5cm or more from the external surface of the oven.
- 2) Safety interlock switches:  
Primary interlock relay switch shall prevent microwave radiation emission in excess of the requirement as above mentioned. Secondary interlock relay and door sensing switch shall prevent microwave radiation emission in excess of  $5\text{ mW/cm}^2$  at any point 5cm or more from the external surface of the oven.

### B. Preparation for testing:

**Before beginning the actual measurement of leakage, proceed as follows:**

- 1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.

Important:

Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030.10(c)(3)(i), must be used for testing.

- 2) Place the load of  $275 \pm 15\text{ ml}$  (9.8 oz) of tap water initially at  $20 \pm 5^\circ\text{C}$  ( $68^\circ\text{F}$ ) in the center of the oven cavity.  
The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic.  
The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
- 3) Set the cooking control on Full Power Cooking Mode.
- 4) Close the drawer and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

### C. Leakage test:

Closed-drawer leakage test (microwave measurement):

- 1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the drawer and the body of the oven.
- 2) Move the probe slowly, not faster than 1 in./sec. (2.5 cm/sec.) along the gap, watching for the maximum indication on the meter.
- 3) Check for leakage at the drawer screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg., around the switches, indicator, and vents).  
While testing for leakage around the drawer, pull the drawer away from the front of the oven as far as is permitted by the closed latch assembly.
- 4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than  $4\text{ mW/cm}^2$ , and that the primary interlock switch/secondary interlock relay does turn the oven OFF before any door movement.

NOTE: After servicing, record data on service invoice and microwave leakage report.

NOTES

# SERVICE MANUAL

## SHARP

### FREE STANDING RANGE WITH MICROWAVE DRAWER

KB-3411JS  
KB-3411JK / KB-3411JW

#### FOREWORD

This supplemental Manual has been prepared to provide Sharp Electronics Corp. Service Personnel with Operation and Service Information for the SHARP FREE STANDING RANGE WITH MICROWAVE DRAWER, KB-3411JS/JK/JW.

Models KB-3411JS, KB-3411JK, and KB-3411JW are quite similar to models KB-3300JS/JK/JW (S74R243KB330J).

It is recommended that service personnel carefully study the entire text of this manual so that they will be qualified to render satisfactory customer service.

Check the interlock switches and the door seal carefully. Special attention should be given to avoid electrical shock and microwave radiation hazard.

#### WARNING

Never operate the oven until the following points are ensured.

- (A) The door is tightly closed.
- (B) The door brackets and hinges are not defective.
- (C) The door packing is not damaged.
- (D) The door is not deformed or warped.
- (E) There is not any other visible damage with the oven.

Servicing and repair work must be carried out only by trained service personnel.

#### DANGER

**Certain initial parts are intentionally not grounded and present a risk of electrical shock only during servicing. Service personnel - Do not contact the following parts while the appliance is energized;**

**High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness;  
If provided, Vent Hood, Fan assembly, Cooling Fan Motor.**

All the parts marked “\*\*” on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to voltage above 250V.

All the parts marked “Δ” on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

**SHARP ELECTRONICS CORPORATION**

**SHARP PLAZA, MAHWAH,  
NEW JERSEY 07430-2135**

PRODUCT DESCRIPTION

POWER CONNECTION  
ANTI-TIP DEVICE

SCHEMATICS

TOUCH CONTROL PANEL

COMPONENT REPLACEMENT  
AND ADJUSTMENT PROCEDURE

WIRING DIAGRAM

PARTS LIST

## OVEN SPECIFICATION

ITEM	DESCRIPTION
Power Requirements	120 /208 - 120/240Volts / 46/50 Amperes 60 Hertz Single phase, 3 wire grounded
Thermal Oven Heating Elements	Top - 3000W Bottom - 2000W
Case Dimensions	Width 29-7/8" Height 37-5/16" Depth 27-5/16"
Cooking Cavity Dimensions 3.8 Cubic Feet	Width 22-5/8" Height 15-13/16" Depth 18"
Cook Top Heating Elements	Two 6" - 1200W One 8" - 2000W One 6"/9" - 1200/2400W
Control Complement	Touch Control System Clock ( 1:00 - 12:59 ) Timer (0 - 99 min. 99 seconds)  Bake pad, Broil pad, Self Clean pad, Timed Cook pad, Number selection pads, Delay Start pad, Stop/Clear pad, Oven Light pad, Control Lock pad, Setup/Custom Help, Cooktop warm, Set/off, On, Control lock/on off, Convection, Timer/Hold to Clear and 3 min Plus.
Oven Cavity Light	40W x 1
Safety Standard	UL Listed
Weight	Approx. 260 lbs.



## MICROWAVE DRAWER SPECIFICATION

ITEM	DESCRIPTION
Power Output	1000 watts (IEC TEST PROCEDURE) Operating frequency of 2450MHz
Cooking Cavity Dimensions 1.0 Cubic Feet	Width 17-11/32 Height 5-7/16" Depth 17-1/8"
Control Complement	<p>Touch Control System Clock ( 1:00 - 12:59 ) Timer (0 - 99 min. 99 seconds) Microwave Power for Variable Cooking Repetition Rate;</p> <p>P-HI ..... Full power throughout the cooking time P-90 ..... approx. 90% of Full Power P-80 ..... approx. 80% of Full Power P-70 ..... approx. 70% of Full Power P-60 ..... approx. 60% of Full Power P-50 ..... approx. 50% of Full Power P-40 ..... approx. 40% of Full Power P-30 ..... approx. 30% of Full Power P-20 ..... approx. 20% of Full Power P-10 ..... approx. 10% of Full Power P-0 ..... No power throughout the cooking time</p> <p>START/MINUTE PLUS pad, Defrost pad, Number selection pad, Micro-warm/ Power Level pad, Timer/Clock pad, Stop/Clear pad, Sensor Reheat, Sensor Popcorn, Sensor Cook, Open pad, Close pad, Setup/Custom Help.</p>
Oven Cavity Light	Yes
Safety Standard	<p>UL Listed                      FCC Authorized</p> <p>DHHS Rules, CFR, Title 21, Chapter 1, Subchapter J</p>

## POWER CONNECTION

### 208/240 VOLT CONNECTION INSTRUCTIONS

The range can be set for 208V or 240V. The voltage setting for your range is pre-set at 240V from the factory. Follow these steps to change the voltage setting.

- 1 Locate the voltage switch on the lower back side of the range.
- 2 Remove the screw and rotate the switch plate 180° as indicated in the Figure 3.
- 3 Reinsert the switch plate and replace screw as indicated in Figure 4. The voltage setting is indicated by the visible marking.

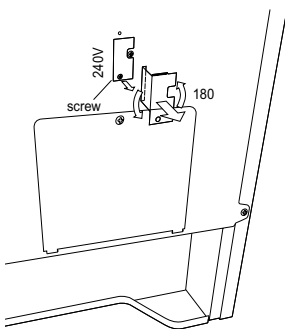


Figure 3

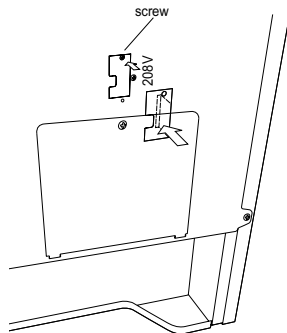
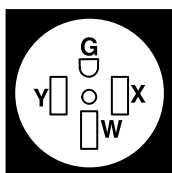


Figure 4

### 3 & 4-WIRE ELECTRICAL WALL RECEPTACLE TYPES & RECOMMENDED MOUNTING ORIENTATION ON WALL

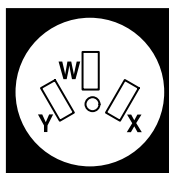
Figure 5A illustrates 4-wire receptacle required for new and remodeled installations.

Figure 5B illustrates 3-wire receptacle that is allowed for existing installations.



4-wire wall receptacle (14-50R)

Figure 5A



3-wire wall receptacle (10-50R)

Figure 5B

### ACCESS TO TERMINAL BLOCK

Loosen screw on rear access cover and pull down as illustrated in Figure 6 to access terminal block wiring connection. To close, return to original location and secure screw.

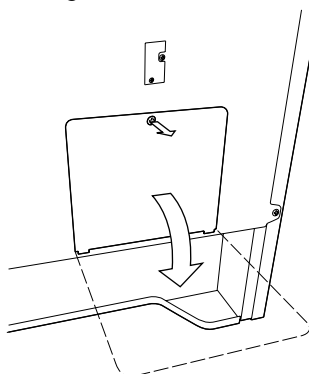


Figure 6

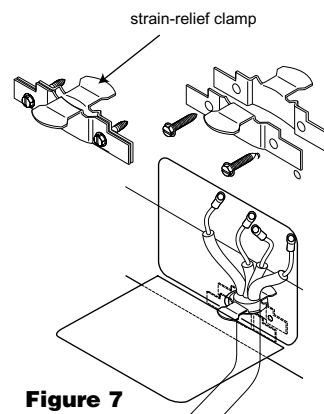


Figure 7

## POWER CORD CONNECTIONS

### 4-WIRE CONNECTION INSTRUCTIONS-FIGURE 8

Before wiring the range, review the suggested power source location. If connecting to a 4-wire electrical system for a new branch-circuit or mobile home use a 4-wire connection.

- 1 Follow the power supply kit manufacturer's Installation Instructions supplied with the strain relief clamp and install. See Figure 7.
- 2 Insert the end connectors for line 1, line 2 and neutral and tighten securely to the terminal block.  
**IMPORTANT** DO NOT LOOSEN the factory installed nut connections which secure the range wiring to the terminal block. Electrical failure or loss of electrical connection may occur if these 3 nuts are loosened or removed.
- 3 You must disconnect the ground strap. Remove the factory installed ground screw and plate to release the copper ground strap from the frame of the range. Cut and discard the copper ground strap and plate. KEEP the ground screw.
- 4 Connect the green ground wire lead with the eyelet to the frame of the range with the ground screw using the same hole in the frame where the ground screw was originally installed. See Figure 8.
- 5 Make sure all screws are tightened securely and replace the rear access cover. See Figure 6.

### 3-WIRE CONNECTION INSTRUCTIONS

For existing installations ONLY, refer to Figure 9.

- 1 Follow the power supply kit manufacturer's Installation Instructions supplied with the strain relief clamp and install. See Figure 7.
- 2 Insert the end connectors for line 1, line 2 and neutral and tighten securely to the terminal block. See Figure 7.  
**IMPORTANT** DO NOT LOOSEN the factory installed nut connections which secure the range wiring to the terminal block. Electrical failure or loss of electrical connection may occur if these 3 nuts are loosened or removed.

- 3 Make sure all connections are tightened securely and replace the rear access cover. See Figure 7.

#### GROUNDING INSTRUCTIONS- ONLY 3-WIRE CONNECTIONS:

A ground strap is installed on this range which connects the center terminal of the neutral terminal block to the range chassis. The ground strap is connected to the range by the center, lowest screw. See Figure 9. The ground strap must not be removed unless National State or Local Codes do not permit use of a ground strap.

**Note:** If the ground strap is removed for any reason, a separate ground wire must be connected to the separate ground screw attached to the range chassis and to an adequate ground source

#### 3 & 4-WIRE PERMANENT WIRE CONNECTIONS

3-wire permanent connection – follow steps 1, 2 and 5 below.

4-wire permanent connection – follow all steps below.

Before wiring the range, review the suggested power source location drawings in Figure 2. If connecting to a 4-wire electrical system:

- 1 Follow the manufacturer's Installation Instructions supplied with the strain relief clamp and install.
- 2 Strip insulation away from the ends of the permanent wiring for line 1, line 2 and neutral; also strip ground wire on 4-wire

#### 4-WIRE CONNECTION

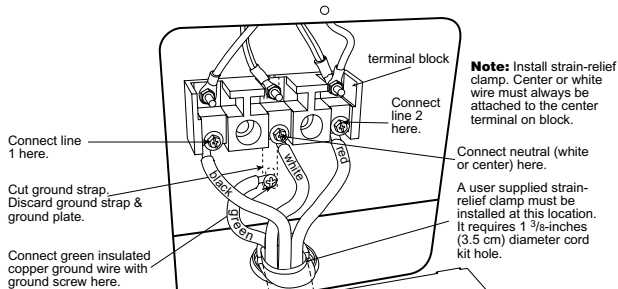


Figure 8

#### 3-WIRE CONNECTION

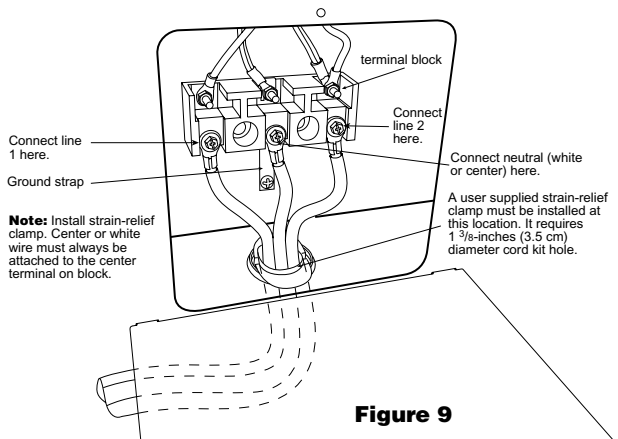


Figure 9

connections. Tighten all 3 or 4-wire leads to the terminal block. Follow wire locations shown in Figure 10.

**IMPORTANT** DO NOT LOOSEN the factory installed nut connections which secure the range wiring to the terminal block. Electrical failure or loss of electrical connection may occur if these 3 nuts are loosened or removed.

**Note:** For 3-wire permanent connection skip steps 3 and 4 and continue with step 5.

- 3 Disconnect the ground strap. Remove the factory installed ground screw and plate to release the factory installed copper ground strap from frame of the range. Cut and discard the copper strap from the terminal block. KEEP the ground screw, ground plate and go to step 4.
- 4 Connect the green ground wire lead to the frame of the range using the ground screw and plate as shown in Figure 11. Be sure to install using the same hole in the frame where the ground screw was originally installed.
- 5 Make sure all connections are tightened securely and replace the rear access cover. See Figure 7.

**Note:** Non-terminated field wire compression connections must be set at approximately 90 in./lbs.

#### FOR 3 & 4-WIRE PERMANENT CONNECTIONS

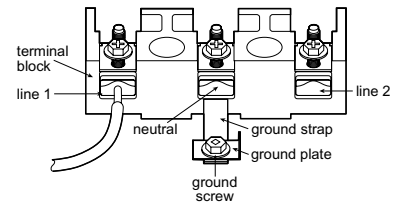


Figure 10

#### 4-WIRE PERMANENT CONNECTION ONLY

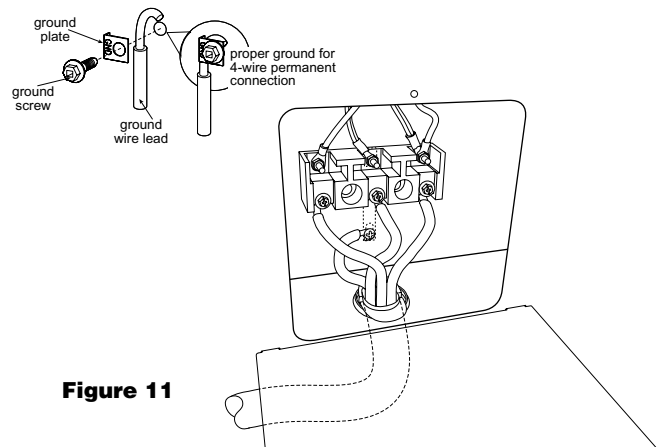


Figure 11

## ANTI-TIP DEVICE

### NORMAL INSTALLATION STEPS

#### ANTI-TIP BRACKET INSTALLATION INSTRUCTIONS IMPORTANT SAFETY WARNING

To reduce the risk of tipping of the range, the range must be secured to the floor by properly installed Anti-Tip bracket and screws packed with the range. Failure to install the Anti-Tip bracket will allow the range to tip over if excessive weight is placed on an open door or if a child climbs upon it. Serious injury might result from spilled hot liquids or from the range itself.

If range is ever moved to a different location, the Anti-Tip bracket must also be moved and installed with the range. Instructions are provided for installation in wood or cement fastened to either the floor or wall. When installed to the wall, make sure that screws completely penetrate dry wall and are secured in wood or metal. When fastening to the floor or wall, be sure that screws do not penetrate electrical wiring or plumbing.

#### 1 LOCATE THE BRACKET - USING THE TEMPLATE

The bracket may be located on either the left or right side of the range. Use the information below to locate the bracket if template is not available.

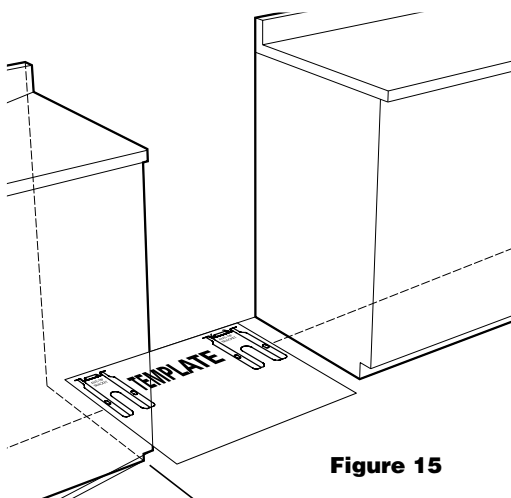


Figure 15

Mark the floor or wall where left or right side of the range will be located. If rear of range is against the wall or no further than 1 1/4-inches from wall when installed, you may use the wall or floor mount method. If molding is installed and does not allow the bracket to fit push against the wall, remove molding or mount bracket to the floor. For wall mount, locate the bracket by placing the back edge of the template against the rear wall and the side edge of template on the mark made referencing the side of the range. Place bracket on top of template and mark location of the screw holes in wall. If rear of range is further than 1 1/4-inches from the wall when installed, attach bracket to the floor. For floor mount, locate the bracket by placing back edge of the template where the rear of the range will be located. Mark the location of the screw holes, shown in template.

#### 2 DRILL PILOT HOLES AND FASTEN BRACKET

Drill a 1/8-inch pilot hole where screws are to be located. If bracket is to be mounted to the wall, drill pilot hole at an approximate 20 degree downward angle. If bracket is to be mounted to masonry or ceramic floors, drill a 5/32-inch pilot hole 1 3/4-inches deep. The screws provided may be used in wood or concrete material. Use a 5/16-inch nut-driver or flat head screwdriver to secure the bracket in place.

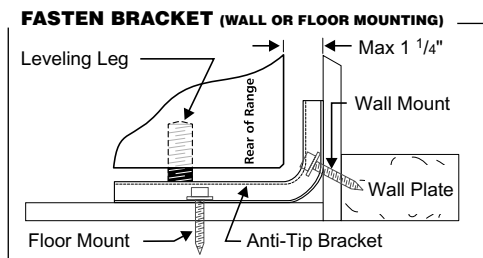


Figure 16

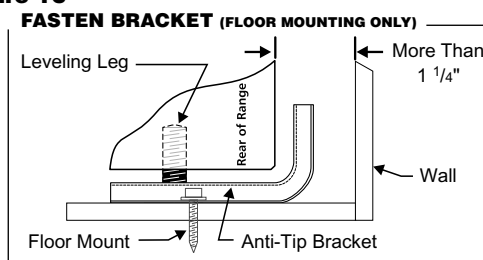


Figure 17

#### 3 LEVEL AND POSITION RANGE

Level range by adjusting the (4) leveling legs with a wrench. Note: A minimum clearance of 1/8-inch is required between the bottom of the range and the leveling leg to allow room for the bracket. Use a level to check your adjustments. Plug range into properly prepared electrical receptacle or if hard wired, check that it was completed properly. Check door condition for evenness and stability. Slide range back into position.

Visually check that rear leveling leg is inserted into and fully secured by the Anti-Tip bracket by looking underneath the range with a flashlight and carefully attempt to tilt it forward.

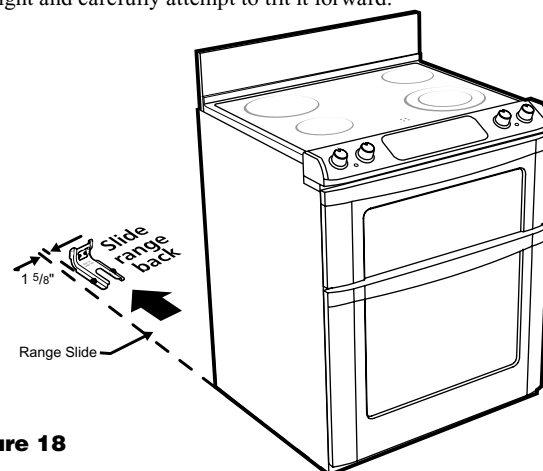
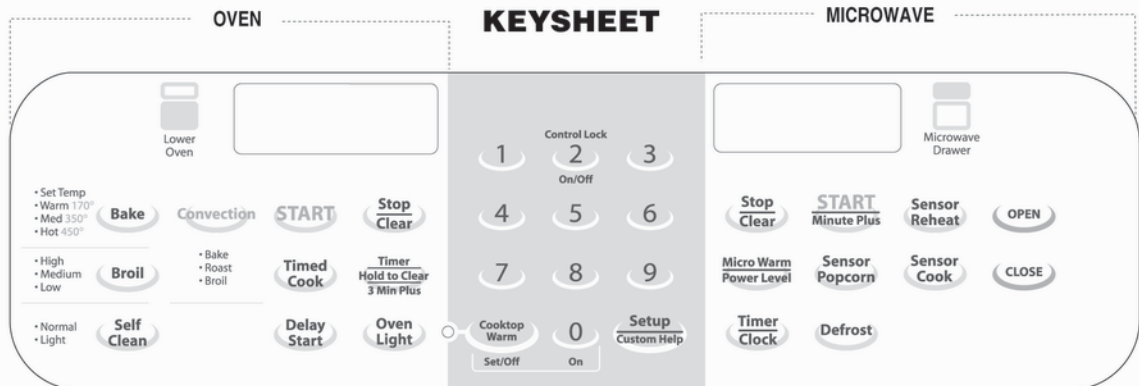
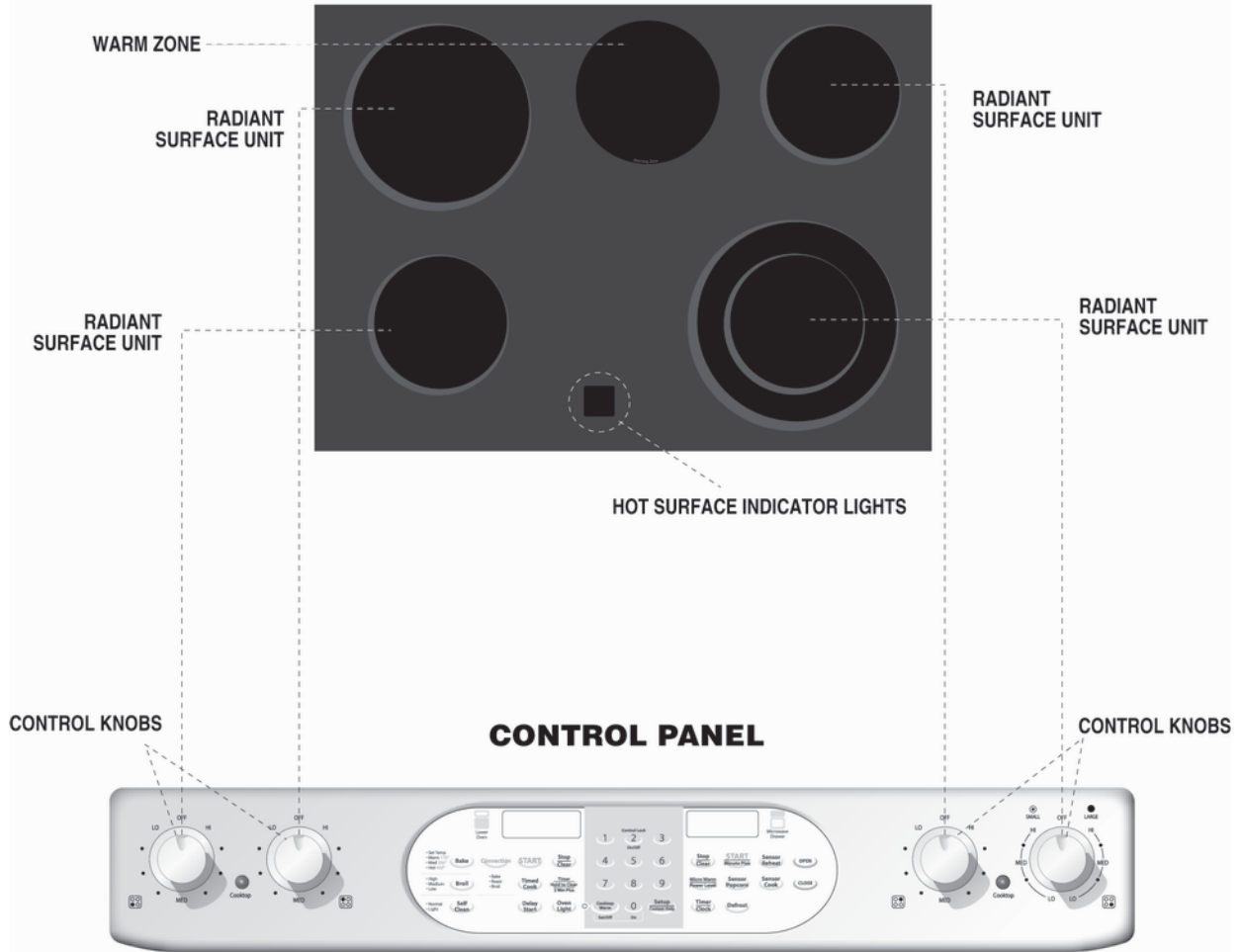


Figure 18

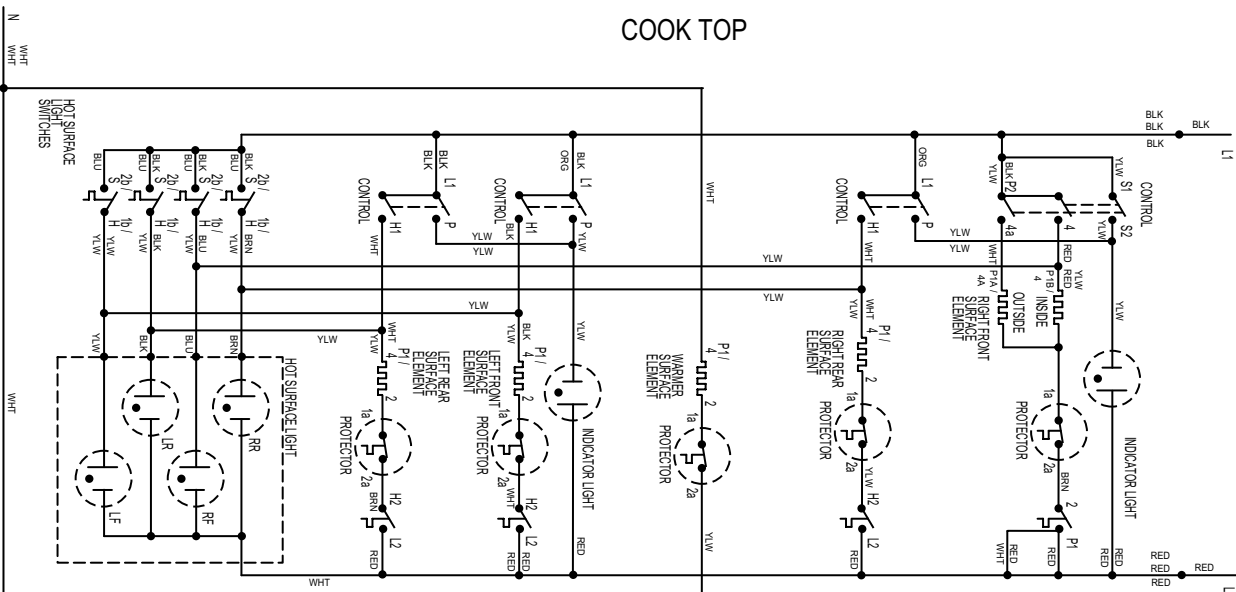
## GLASS CERAMIC COOKTOP



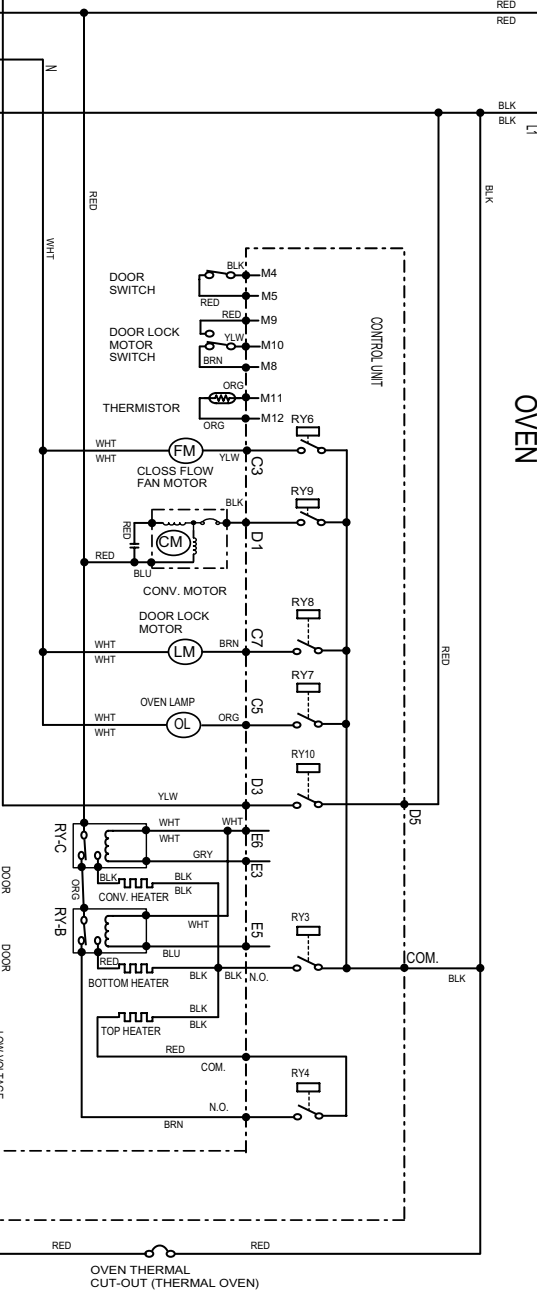
KB-3411JW

# Schematic-Off Condition

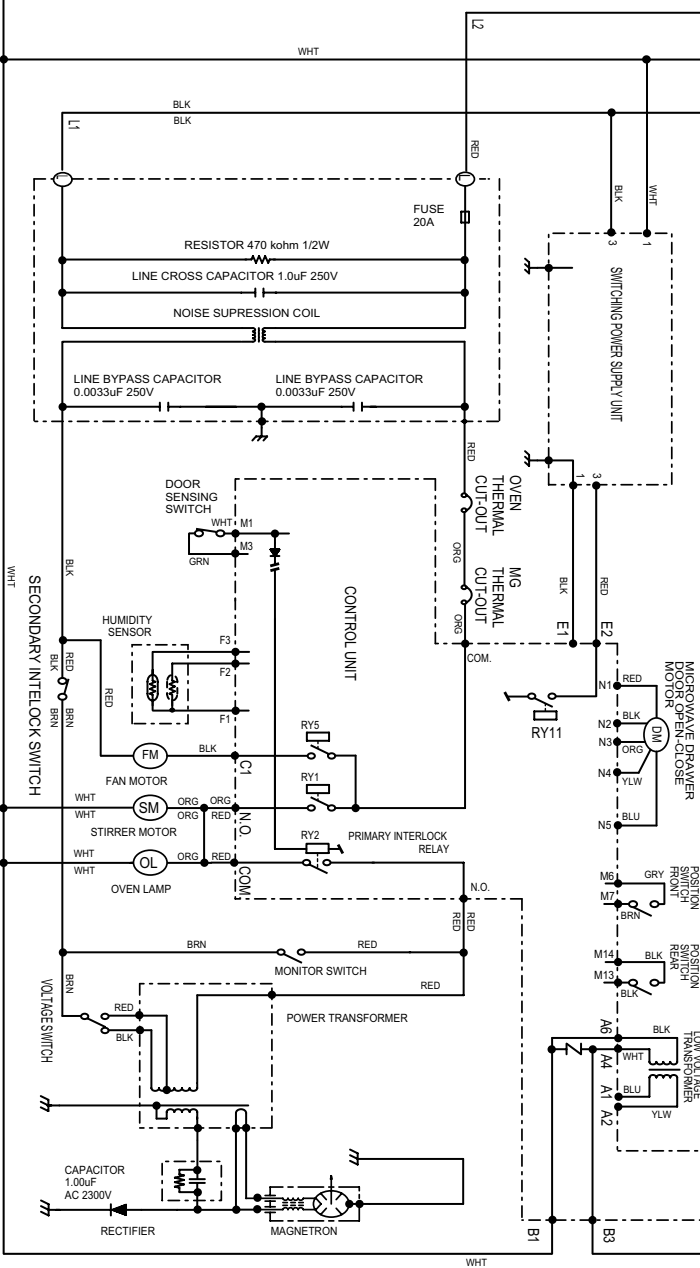
## COOK TOP



## OVEN



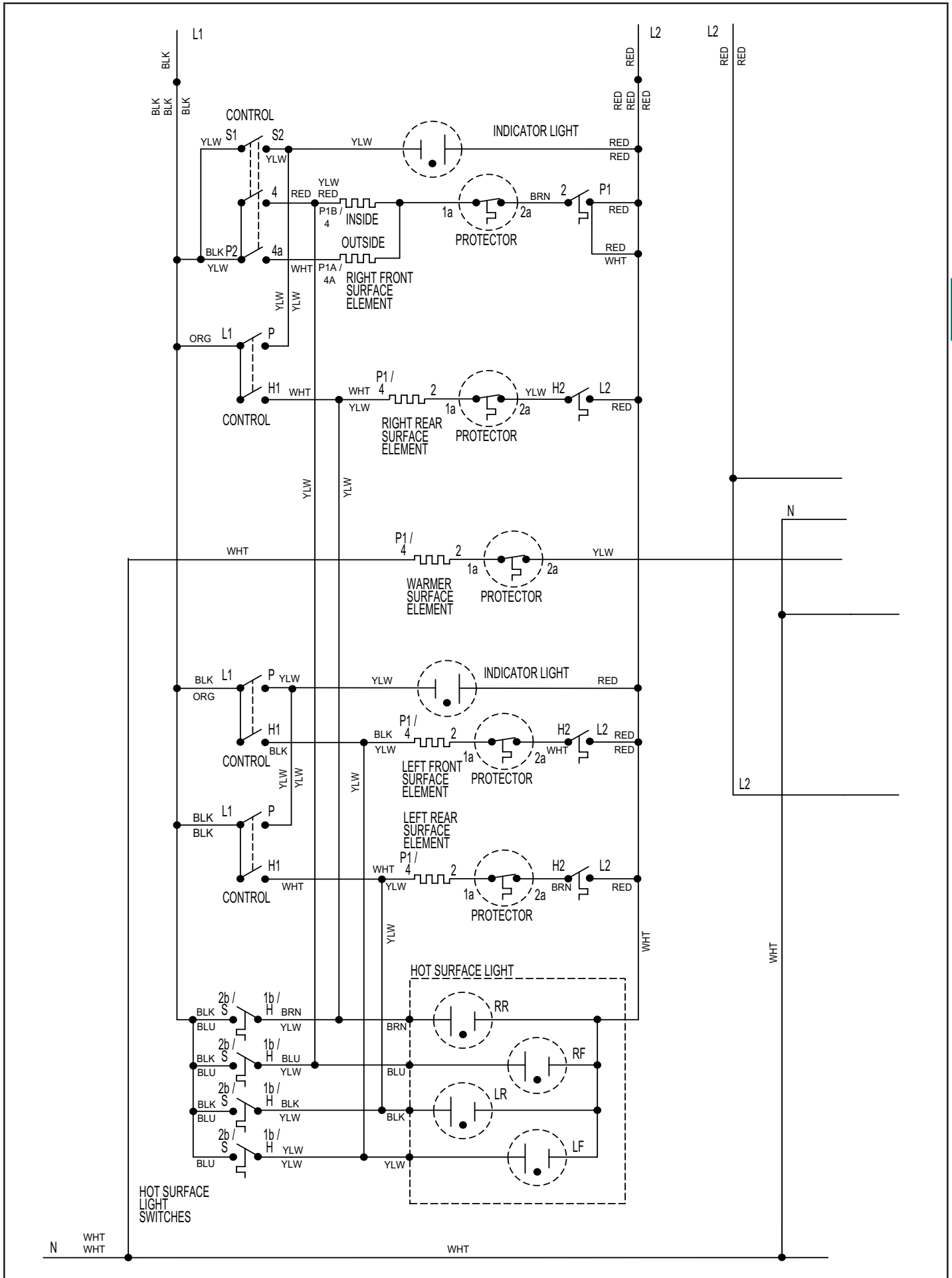
## MICROWAVE DRAWER



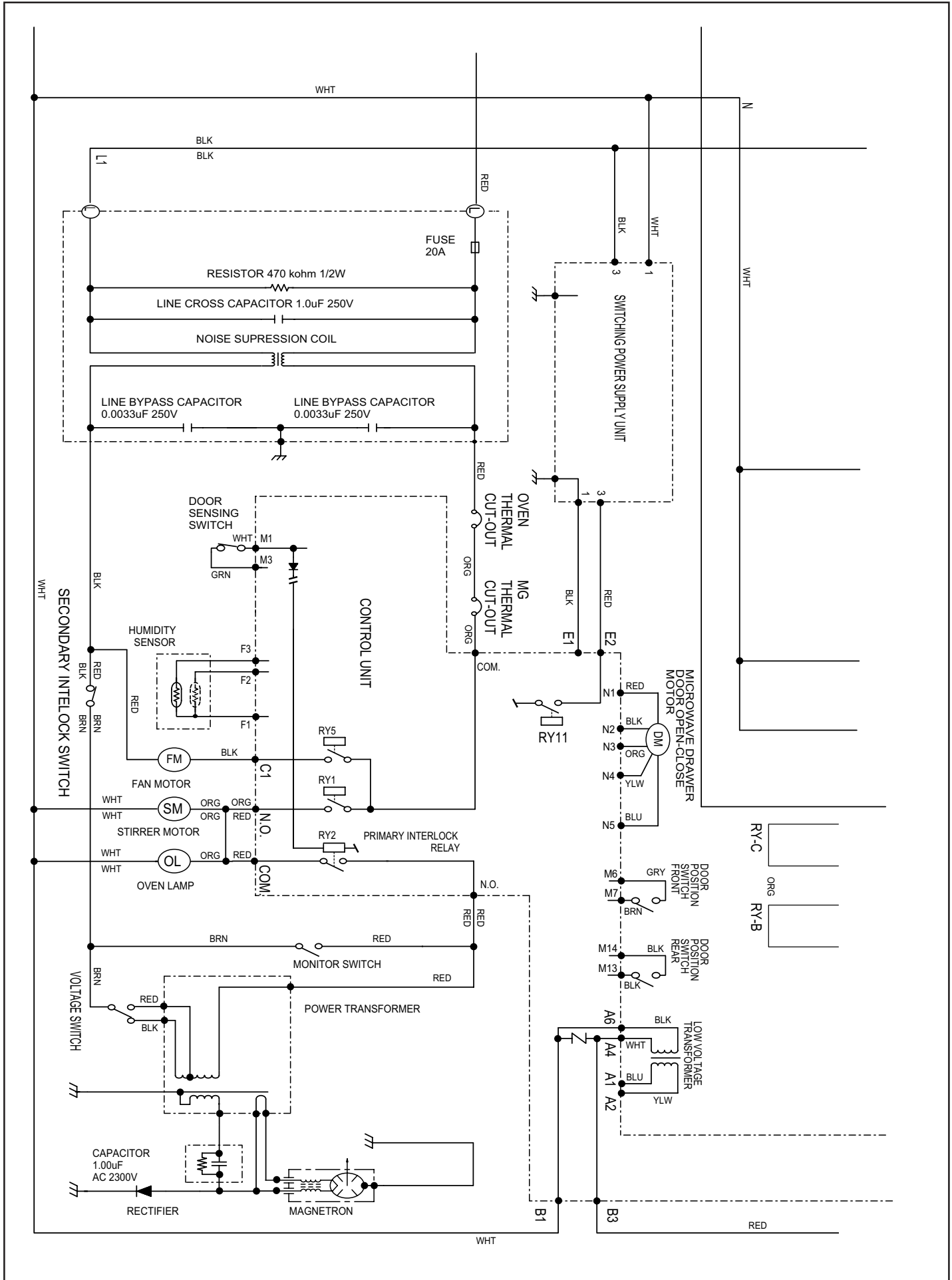
### NOTES:

1. Circuits / wire colors are subject to change without notice.
2. Terminal that is located on the right side on lamp sockets back view must be connected to neutral wire.

# COOK TOP SCHEMATIC (DETAIL)

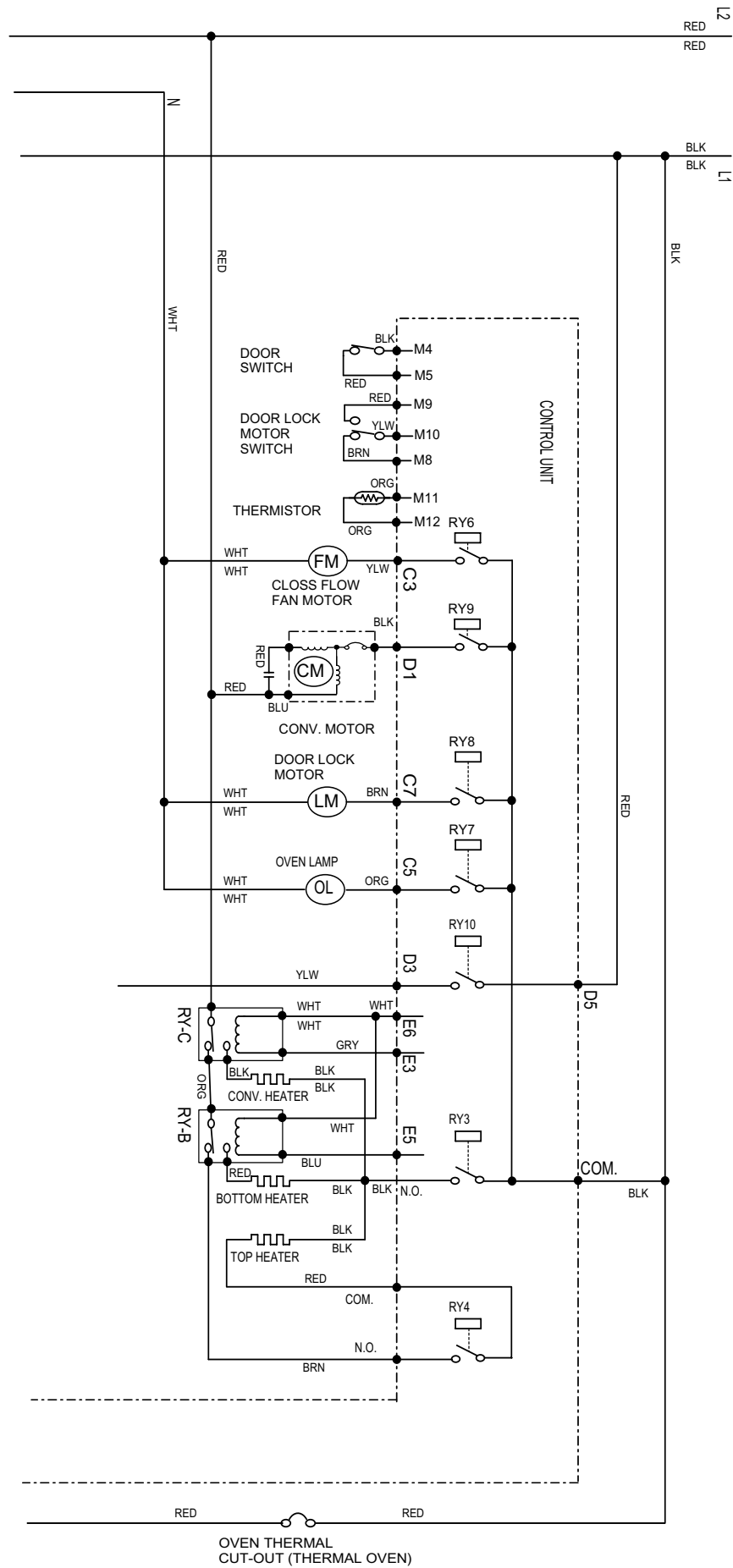


# MICROWAVE DRAWER SCHEMATIC (DETAIL)





# RANGE SCHEMATIC (DETAIL)



# TOUCH CONTROL PANEL ASSEMBLY

## OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units.

- (1) Keyboard unit
- (2) Control Unit
- (3) Power unit

The principal functions of these units and the signals communicated among them are explained below.

### Keyboard unit

The keyboard unit is composed of a matrix, signals generated in the LSI are sent to the keyboard unit. When a key pad is touched, a signal is completed through the keyboard unit and passed back to the LSI to perform the function that was requested.

### Control Unit and Power Unit

Control unit consists of LSI, IC, reset circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit, synchronizing signal circuit, keyboard unit circuit, humidity sensor circuit and back light circuit.

#### 1) IC1 (LSI)

This is a microcomputer, responsible for controlling the entire control unit.

#### 2) IC2

This is the IC to drive the Liquid Crystal Display (LCD1).

#### 3) IC3

This is the IC to drive the Liquid Crystal Display (LCD2).

#### 4) IC4

This is the IC to judge the selected key.

#### 5) IC5

This is the IC to amplify the signal from the humidity sensor.

#### 6) IC6

This is memory IC.

#### 7) IC7

This is the IC to drive the relays.

#### 8) IC8

This is the IC to drive the relays.

#### 9) Reset Circuit

This circuit generates a signal which resets the LSI (IC1) to the initial state when power is supplied.

#### 10) Indicator Circuit

A circuit to drive the Liquid Crystal Displays (LCD1, LCD2).

#### 11) Power Source Circuit

This circuit generates voltages necessary in the control unit from the AC line voltage.

In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VC	+5V	LSI(IC1)

#### 12) Relay Circuit

A circuit to drive the magnetron, fan motor, stirrer motor, convection motor, door lock motor, bottom heater, top heater, convection heater and light the oven lamp.

#### 13) Buzzer Circuit

The buzzer is responsive to signals from the LSI to emit audible sounds (key touch sound and completion sound).

#### 14) Synchronizing Signal Circuit

The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit.

It accompanies a very small error because it works on commercial frequency.

#### 15) Door Sensing Switch (Microwave drawer)

A switch to "tell" the LSI if the drawer is open or closed.

#### 16) Door Switch (Oven)

A switch to "tell" the LSI if the oven door is open or closed.

#### 17) Door Lock Monitor Switch (Oven)

A switch to "tell" the LSI if the oven door is locked or not.

#### 18) Door Position Switch Front / Rear

The switch to "tell" the position of the Microwave drawer door.

#### 19) Back Light Circuit

A circuit to drive the back light (Light emitting diodes LD1- LD6).

#### 20) Cook Top Warmer Indicator Circuit

A circuit to drive the indicator (LD10) for Cook Top Warmer.

#### 21) Humidity Sensor Circuit

This circuit detects moisture of the cooking food to allow its automatic cooking.

#### 22) Temperature Measurement Circuit : (OVEN THERMISTOR)

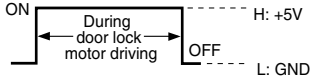
The temperature in the oven cavity is sensed by the thermistor. The variation of resistance according to sensed temperature is detected by the temperature measurement circuit and the result applied to LSI. The LSI uses this information to control the relay and display units.

#### 23) Microwave Drawer Door Open-Close Motor Circuit

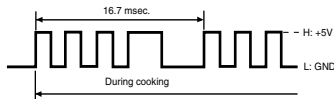
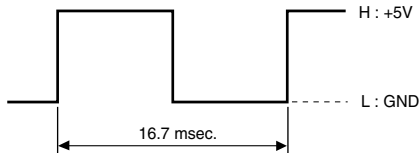
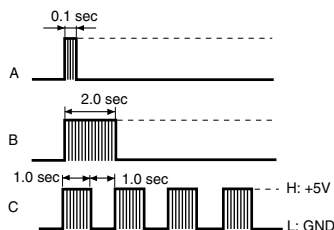
A circuit to drive the drawer door open-close Motor.

## DESCRIPTION OF LSI (IC-1)

The I/O signal of the LSIs detailed in the following table.

Pin No.	Signal	I/O	Description
1	AN5	IN	<b>Temperature measurement input: OVEN THERMISTOR.</b> By inputting DC voltage corresponding to the temperature detected by the thermistor, this input is converted into temperature by the A/D converter built into the LSI.
2	AN4	IN	Terminal not used.
3	AN3	OUT	<b>Door lock motor driving signal.</b> To turn on and off shut-off relay(RY8). “H” level during door lock motor driving “L” level otherwise 
4	AN2	IN	<b>Input signal which communicates the oven door locked information to LSI.</b> Door unlocked; “H” level signal(+5V). Door locked; “L” level signal(0V).
5	AN1	IN	<b>Input signal which communicates the oven door unlocked information to LSI.</b> Door locked; “H” level signal(+5V). Door unlocked; “L” level signal(0V).
6	AN0	IN	Terminal not used.
7	CNVSS	IN	<b>Power source voltage: 0V (GND).</b> VC voltage of power source circuit input. Connected GND.
8	RESET	IN	<b>Auto clear terminal.</b> Signal is input to reset the LSI to the initial state when power is applied. Temporarily set to “L” level the moment power is applied, at this time the LSI is reset. Thereafter set at “H” level.
9	P62	OUT	Memory (EEPROM) clock out.
10	P61	IN/OUT	Memory (EEPROM) data input/output.
11	VSS	IN	<b>Power source voltage: 0V (GND).</b> VS voltage of power source circuit input. Connected GND.
12	XIN	IN	<b>Internal clock oscillation frequency setting input.</b> The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to Xout terminal.
13	XOUT	OUT	<b>Internal clock oscillation frequency control output.</b> Output to control oscillation input of Xin.
14	VCC	IN	<b>Power source voltage: +5V.</b> VC voltage of power source circuit input.
15	P60	IN	Plus signal coming from the Microwave drawer door open-close motor is input into P60 as revolution number.
16	P37	IN	<b>Input signal which communicates the drawer door open information to LSI from the door position switch front.</b> Door opened; “L” level signal(0V). Door closed; “H” level signal(+5V).
17	P36	OUT	<b>Signal to change the rotational direction is output to the Microwave drawer door open-close motor.</b>
18	P35	OUT	Signal to change the rotational speed is output to the Microwave drawer door open-close motor.
19	P34	OUT	Power source to drive the Microwave drawer door open-close motor is output.
20	RXD2	IN	<b>Input terminal to check the data of display.</b> Data signal from IC-3 is input to RXD2 to check the flow of the data.
21	TXD2	IN	<b>Output terminal to send IC-2 the data.</b> The data of display is output to IC-2.
22	SCLK2	OUT	<b>Clock timing signal output terminal.</b> Clock timing signal is sent to IC-2 and IC-3.

Pin No.	Signal	I/O	Description
23	P30	OUT	<b>Signal to reset LSI.</b> Signal is output to reset IC-2, IC-3 and IC-4.
24 - 27	COM3 - COM0	OUT	Terminal not used.
28	VL3	IN	Connected VC (+5V).
29 - 34	P27- P22	OUT	Terminal not used.
35	P21	OUT	Terminal not used.
36	P120	OUT	<b>Convection heater relay driving signal.</b> To turn on and off relay(RYC). "H" level: During convection heater relay ON. "L" level: During convection heater relay OFF.
37	P17	OUT	<b>Bottom heater relay driving signal.</b> To turn on and off relay(RYB). "H" level: During bottom heater relay ON. "L" level: During bottom heater relay OFF.
38	P16	OUT	<b>Cook top warmer driving signal.</b> To turn on and off relay(RY10). "H" level: During cook top warmer ON. "L" level: During cook top warmer OFF.
39	P15	OUT	<b>Oven convection motor driving signal.</b> To turn on and off relay(RY9). "H" level: During convection motor ON. "L" level: During convection motor OFF.
40	P14	OUT	<b>Door lock motor driving signal.</b> To turn on and off relay(RY8). "H" level: During door lock motor ON. "L" level: During door lock motor OFF.
41	P13	OUT	<b>Oven lamp (Oven) driving signal.</b> To turn on and off relay(RY7). "H" level: During oven lamp ON. "L" level: During oven lamp OFF.
42	P12	OUT	<b>Fan motor (Oven) driving signal.</b> To turn on and off relay(RY6). "H" level: During fan motor ON. "L" level: During fan motor OFF.
43	P11	OUT	<b>Fan motor (Drawer) driving signal.</b> To turn on and off relay(RY5). "H" level: During fan motor ON. "L" level: During fan motor OFF.
44	P10	OUT	<b>Top heater driving signal.</b> To turn on and off relay(RY4). "H" level: During top heater ON. "L" level: During top heater OFF.
45	P07	OUT	<b>Oven common relay driving signal.</b> To turn on and off relay(RY3). "H" level: During oven common relay ON. "L" level: During oven common relay OFF.
46	P06	OUT	<b>Oven lamp and stirrer motor driving signal.</b> To turn on and off relay(RY1). "H" level: During oven lamp and stirrer motor ON. "L" level: During oven lamp and stirrer motor OFF.
47	P05	OUT	<b>Magnetron high-voltage circuit driving signal.</b> To turn on and off the cook relay(RY2). In 100% power operation,

Pin No.	Signal	I/O	Description																																																																	
			<div>the signals holds “H” level during microwave cooking and “L” level while not cooking. In other cooking modes (90%, 80%, 70%, 60%, 50%, 40%, 30%, 20%, 10%, 0%) the signal turns to “H” level and “L” level in repetition according to the power level.</div> <table><tr><td></td><td colspan="2">Microwave cooking mode</td><td colspan="2">Other cooking mode</td></tr><tr><td>VARI MODE</td><td>ON TIME</td><td>OFF TIME</td><td>ON TIME</td><td>OFF TIME</td></tr><tr><td>100% power</td><td>32 sec.</td><td>0 sec.</td><td>60sec.</td><td>0ec.</td></tr><tr><td>90% power</td><td>30 sec.</td><td>2 sec.</td><td>54sec.</td><td>6sec.</td></tr><tr><td>80% power</td><td>26 sec.</td><td>6 sec.</td><td>48sec.</td><td>12sec.</td></tr><tr><td>70% power</td><td>24 sec.</td><td>8 sec.</td><td>42sec.</td><td>18sec.</td></tr><tr><td>60% power</td><td>22 sec.</td><td>10 sec.</td><td>36sec.</td><td>24sec.</td></tr><tr><td>50% power</td><td>18 sec.</td><td>14 sec.</td><td>30sec.</td><td>30sec.</td></tr><tr><td>40% power</td><td>16 sec.</td><td>16 sec.</td><td>24sec.</td><td>36sec.</td></tr><tr><td>30% power</td><td>12 sec.</td><td>20 sec.</td><td>18sec.</td><td>42sec.</td></tr><tr><td>20% power</td><td>8 sec.</td><td>24 sec.</td><td>12sec.</td><td>48sec.</td></tr><tr><td>10% power</td><td>6 sec.</td><td>26 sec.</td><td>4sec.</td><td>56sec.</td></tr><tr><td>0% power</td><td>0 sec.</td><td>32 sec.</td><td>0sec.</td><td>60sec.</td></tr></table>		Microwave cooking mode		Other cooking mode		VARI MODE	ON TIME	OFF TIME	ON TIME	OFF TIME	100% power	32 sec.	0 sec.	60sec.	0ec.	90% power	30 sec.	2 sec.	54sec.	6sec.	80% power	26 sec.	6 sec.	48sec.	12sec.	70% power	24 sec.	8 sec.	42sec.	18sec.	60% power	22 sec.	10 sec.	36sec.	24sec.	50% power	18 sec.	14 sec.	30sec.	30sec.	40% power	16 sec.	16 sec.	24sec.	36sec.	30% power	12 sec.	20 sec.	18sec.	42sec.	20% power	8 sec.	24 sec.	12sec.	48sec.	10% power	6 sec.	26 sec.	4sec.	56sec.	0% power	0 sec.	32 sec.	0sec.	60sec.
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48-52	P04-P00	OUT	Used for initial balancing of the bridge circuit (absolute humidity sensor).																																																																	
53	P57	OUT	<div><b>Common relays driving signal. (Square Waveform : 60Hz)</b></div> <div>To turn on and off the shut-off relays (RY1 and RY3). The square waveform voltage is delivered to the relays (RY1 and RY3) driving circuit.</div> <div></div>																																																																	
54	P56	IN	Signal coming from key unit.																																																																	
55	TXD1	IN	Signal coming from key unit.																																																																	
56	RXD1	IN	Signal coming from key unit.																																																																	
57	P53	IN	<b>To input signal which communicates the oven door open/close information to LSI.</b> Door open "H" level signal (+5V). Door close "L" level signal (GND).																																																																	
58	P52	OUT	<div><b>Signal to sound buzzer.</b></div> <div>A: Key touch sound. B: Completion sound. C: When the oven stops so that the food can be checked in Automatic cooking mode.</div> <div></div>																																																																	
59	P51	IN	<b>Input signal which communicates the drawer door open/ close information to LSI.</b> Door opened; “H” level signal(+5V). Door closed; “L” level signal(0V).																																																																	
60	INT0	IN	<div><b>Signal to synchronize LSI with commercial power source frequency.</b></div> <div>This is the basic timing for all real time processing of LSI.</div> <div></div>																																																																	
61	AVSS	IN	<b>A/D converter power source voltage.</b> The power source voltage to drive the A/D converter in the LSI.																																																																	
62	VREF	IN	<b>Reference voltage input terminal.</b> A reference voltage applied to the A/D converter in the LSI. Connected to +5V.																																																																	
63	AN7	IN	<b>AH sensor input.</b> This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.																																																																	
64	AN6	IN	Used for initial balancing of the bridge circuit (absolute humidity sensor). This input is an analog input terminal from the AH sensor circuit, and connected to the A/D converter built into the LSI.																																																																	

## PRECAUTIONS FOR USING LEAD-FREE SOLDER

### 1. Employing lead-free solder

The "Main PWB" of this model employs lead-free solder. This is indicated by the "LF" symbol printed on the PWB and in the service manual. The suffix letter indicates the alloy type of the solder.

Example:

**LF**a  
**Sn-Ag-Cu**

Indicates lead-free solder of tin, silver and copper.

### 2. Using lead-free wire solder

When repairing a PWB with the "LF" symbol, only lead-free solder should be used. (Using normal tin/lead alloy solder may result in cold soldered joints and damage to printed patterns.)

As the melting point of lead-free solder is approximately 40°C higher than tin/lead alloy solder, it is recommend that a dedicated bit is used, and that the iron temperature is adjusted accordingly.

### 3. Soldering

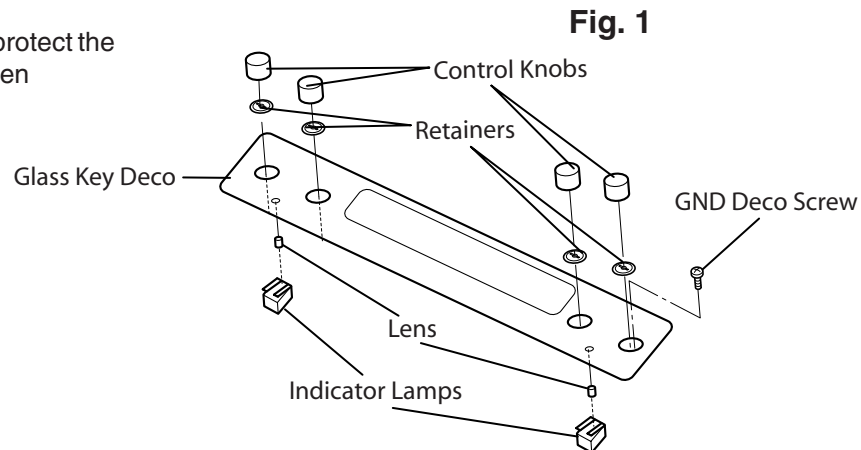
As the melting point of lead-free solder (Sn-Ag-Cu) is higher and has poorer wettability, (flow), to prevent damage to the land of the PWB, extreme care should be taken not to leave the bit in contact with the PWB for an extended period of time. Remove the bit as soon as a good flow is achieved. The high content of tin in lead free solder will cause premature corrosion of the bit. To reduce wear on the bit, reduce the temperature or turn off the iron when it is not required.

Leaving different types of solder on the bit will cause contamination of the different alloys, which will alter their characteristics, making good soldering more difficult. It will be necessary to clean and replace bits more often when using lead-free solder. To reduce bit wear, care should be taken to clean the bit thoroughly after each use.

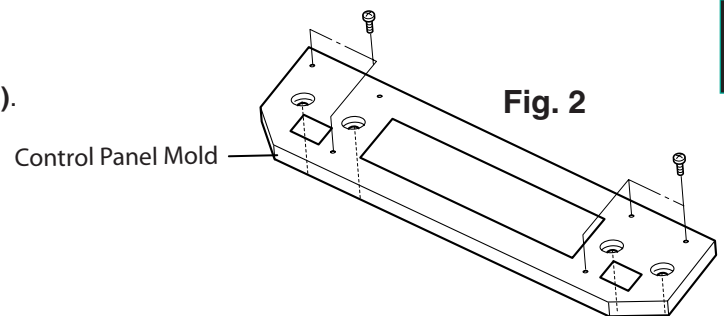
# OVEN / MICROWAVE DRAWER DISASSEMBLY

**WARNING: Follow all safety precautions beginning on Page 2 before proceeding!**

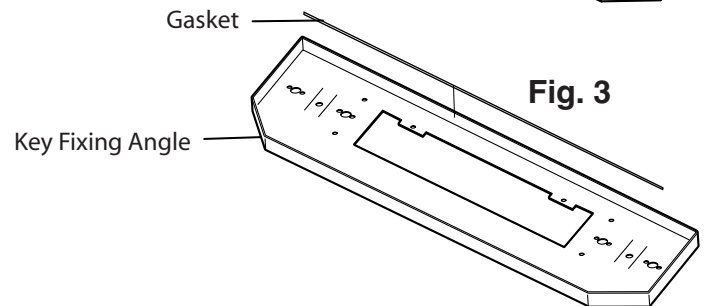
1. Before removing Control Panel, take measures to protect the Cook Top surface and keep Microwave Drawer open to prevent scratches.
2. Remove all Control Knobs (**Fig 1**).
3. Unscrew all Retainers (**Fig 1**).
4. Unscrew Glass Key Deco screw (1) (**Fig 1**).
5. Carefully lift Glass Key Deco and unhook Indicator Lamp from Lens (**Fig 1**).



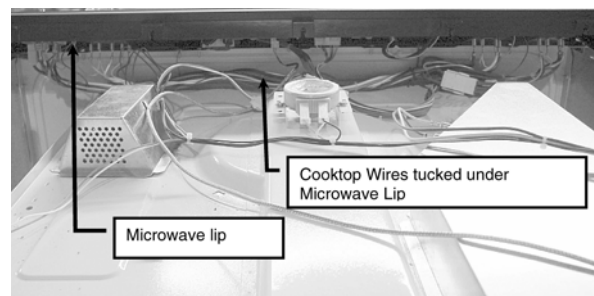
6. Remove all screws from Control Panel Mold (**Fig 2**).
7. Slide Control Panel Mold to left (to unlock) and lift (**Fig 2**).



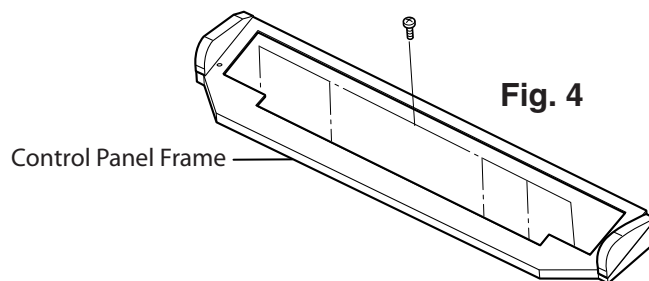
8. Remove Gasket from Key Fixing Angle (**Fig 3**).
9. Lift Key Fixing Mold and carefully unhook all Molex's, ground wire and C/P wiring (**Fig 3**).



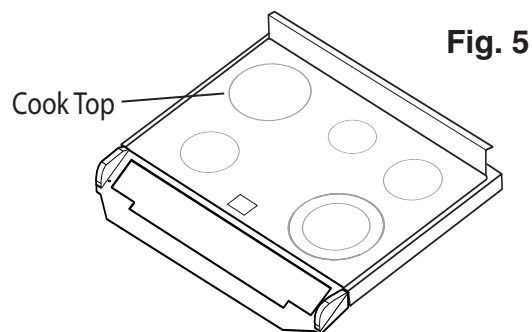
**NOTE:** When reassembling, it is very important that all Cook Top wires are tucked under the Microwave cavity lip and secured with the RED WIRE STRAP. The 240v harness can create noise that can interfere with C/P function (example: intermittent or no keyboard operation).



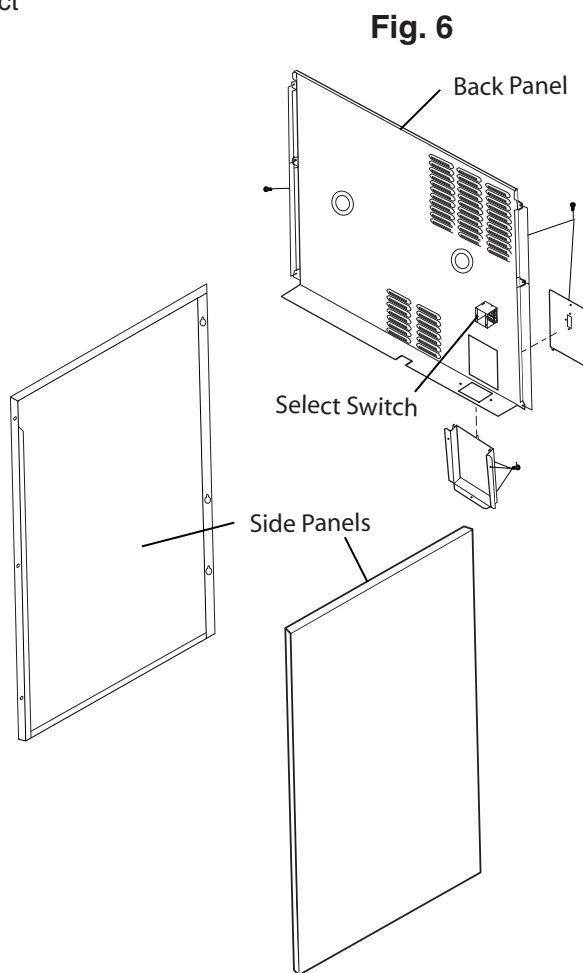
10. Remove screws from Control Panel Frame (**Fig 4**).



11. Slide Cook Top forward to unlock from shoulder screws, then remove or reposition (**Fig. 5**).



12. Remove electrical cover and screws holding the select switch from back plate. Then remove all screws on back plate and carefully remove back/side panels (**Fig. 6**).



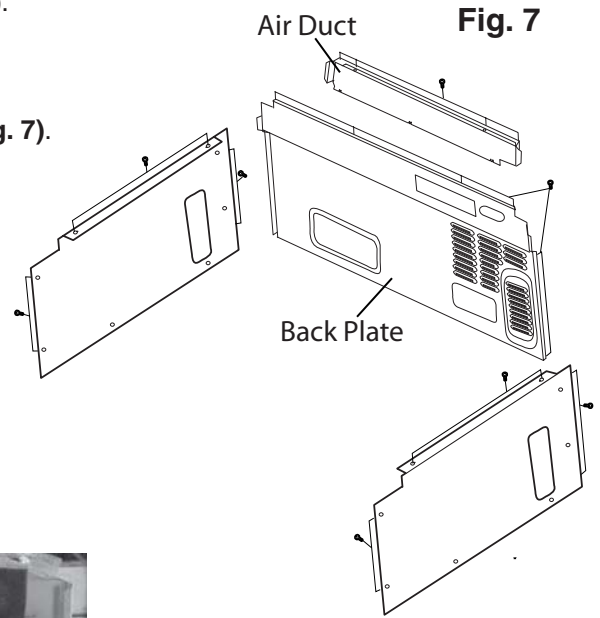


14. Remove screws from Microwave top Air Duct and take off (**Fig. 7**).
15. Remove all screws from Microwave Back Plate (**Fig. 7**).
16. Lift Back Plate and remove carefully not to damage any wires (**Fig. 7**).

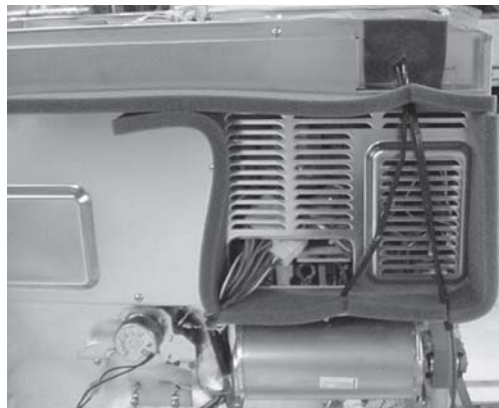
**NOTE:**

The Microwave Back Plate cannot be completely removed due to wiring. If you need to remove, you will have to unhook all wiring routed through it.

Also, the cushion placement is very important and must be replaced if damaged during removal (**Fig. 8**).



**Fig. 8**



**At this point, you will have access to all parts of the Microwave and Oven.**

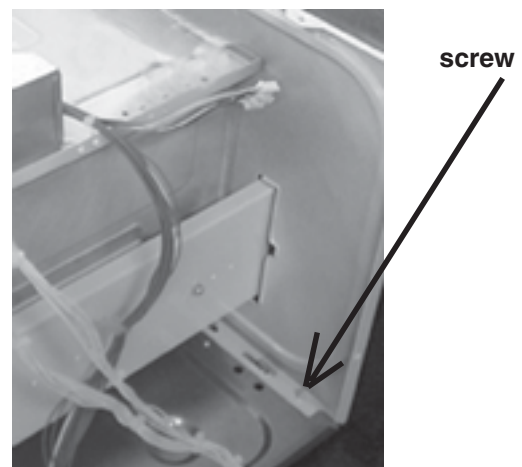
## **MICROWAVE DRAWER ASSEMBLY REMOVAL TO ACCESS OVEN COMPONENTS**

### **OVEN COMPONENT REMOVAL**

1. After disassembly as previously stated, remove Microwave Drawer assembly by removing (2) screws (**right & left**) from front of Microwave Baseplate (**Fig. R-1**).
2. Unhook wires from Range Oven to Microwave Drawer, remove Drawer assembly from Oven.

**You now have access to Range Oven components.**

**Fig. R-1**



## STOP SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH REMOVAL

1. Disconnect the power supply cord.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the Cook Top.
5. Remove the Cook Top Stay (right or left).
6. Remove the screw holding the latch hook to the oven flange.
7. Remove the latch hook from the oven flange.
8. Disconnect the wire leads of each switch.
9. Remove each switch from the latch hook by pushing the one (1) stopper tab holding each switch.
10. Now, each switch is free.

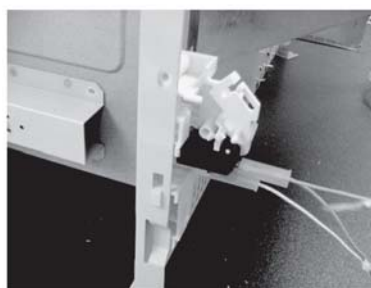
Latch Hook Left



### Re-install

1. Re-install each switch in its place. The secondary interlock switch is in the lower position and the monitor switch is in the top position, located on the left side of the unit. The door sensing switch by itself on the right side of the unit.
2. Re-connect wire leads to each switch. Refer to pictorial diagram.
3. Secure the latch hooks with mounting screws to oven flange.
4. Make sure that the monitor switch is operating properly and check continuity of the monitor circuit. Refer to chapter "Test Procedure" and "Adjustment procedure".

Latch Hook Right



## STOP SWITCH, SECONDARY INTERLOCK SWITCH AND MONITOR SWITCH ADJUSTMENT

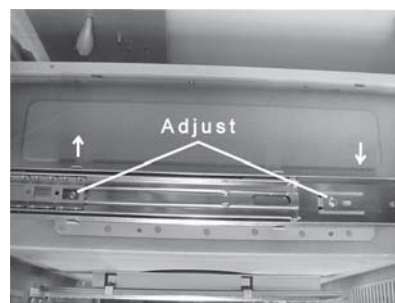
1. Disconnect the power supply cord.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the Cook Top.
5. Remove the Cook Top Stay (right or left). If the door sensing switch, secondary interlock switch and monitor switch do not operate properly due to a misadjustment, the following adjustment should be made.
6. Loosen the screw holding latch hook to the oven cavity flange.
7. With drawer closed, adjust latch hook by moving it back and forth, and up and down. In and out play of the door allowed by the upper and lower position of the latch hook should be less than 0.5mm. The vertical position of the latch hook should be adjusted so that the secondary interlock switch is activated with the drawer closed. The horizontal position of the latch hook should be adjusted so that the monitor switch and drawer sensing switch are activated with the drawer closed.
8. Secure the screws with washers firmly.
9. Check all of the switches operation. If any switch has not activated fully, you will need to adjust the slide rail attached to the Microwave cavity.
10. This is done by following the steps to remove the "DRAWER/SLIDE RAIL REMOVAL" on page 42. After you have removed the slide rails, loosen the "2" screws holding the slide rail to the Microwave cavity and tilt the front end up and the rear end down, then tighten the screws (**Fig. S-1**).

11. Check and assure that the cap nuts on the Drawer Support Angles are centered when passing through the cavity face plate.

### After adjustment, check the following.

1. In and out play of door remains less than 0.5mm when in the latched position. First check upper position of latch hook, pushing and pulling upper portion of drawer toward the oven face. Then check lower portion of the latch hook, pushing and pulling lower portion of the door toward the oven face. Both results (play in the door) should be less than 0.5mm.
2. The secondary interlock switch switch interrupt the circuit before the door can be opened.
3. Monitor switch contacts close when door is opened.
4. Door sensing switch contacts open when door is opened.
5. Reassemble the unit and check for microwave leakage around door with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.

Fig. S-1



## DRAWER ASSEMBLY AND CHOKE REMOVAL

1. Disconnect the power supply cord.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the both right and left Cook Top Stays.
5. Remove (2) Drawer Support Covers from Choke Cover as shown in **(Fig. D-1)**.
6. Insert a putty knife (thickness of about 0.5mm) into the gap between the choke cover and the door frame.
7. Carefully slide choke cover away from drawer as far as possible.
8. Remove (6) screws from all (3) drawer Support Angles as shown in **(Fig. D-2)**.
9. Unhook Drawer Support Angles from drawer, then remove.
10. Now, the door assembly is free and the Choke Cover can now be removed.

**Fig. D-1**



## NOTE:

To remove only the Microwave Drawer, follow steps 1, 2, 5, 8, 9 & 10 as instructed under "DRAWER ASSEMBLY AND CHOKE REMOVAL".

**Fig. D-2**



## DRAWER SUPPORT ANGLE REMOVAL

1. Remove Drawer Assembly and Choke Cover as stated in "DRAWER ASSEMBLY AND CHOKE REMOVAL".
2. Remove (2) screws from right or left Latch Angle Assembly, then remove Angle assembly **(Fig. D-4)**.
3. Separate Slide Rails by moving inside lever of Slide Rails. The Slide Rail will now separate by pulling straight forward and out **(Fig. D-3)**.
4. At this point, you can replace either Latch Angle Assy or Latch Angles.

**To reassemble, just reverse the above order.**

**After reassembly, do the following.**

- (A) Make sure that drawer sensing switch, secondary interlock switch and monitor switch are operating properly. (Refer to chapter "Test Procedures".)
- (B) An approved microwave survey meter should be used to assure compliance with proper microwave radiation emission limitation standards.

**After any servicing, make sure of the following :**

1. Drawer latch heads smoothly catch latch hook through latch holes and that latch head goes through center of latch hole.
2. Deviation of door alignment from horizontal line of cavity face plate is to be less than 1.0mm.
3. Drawer is positioned with its face pressed toward cavity face plate.
4. Reassemble the unit and check for microwave leakage around drawer with an approved microwave survey meter. (Refer to Microwave Measurement Procedure.)

**Note:** The drawer on a microwave oven is designed to act as an electronic seal preventing the leakage of microwave energy from oven cavity during cook cycle. This function does not require that door be air-tight, moisture (condensation)-tight or light-tight. Therefore, occasional appearance of moisture, light or sensing of gentle warm air movement around oven drawer is not abnormal and do not of themselves indicate a leakage of microwave energy from oven cavity.

**Fig. D-3**



**Fig. D-4**



## SWITCH ANGLE REMOVAL/ADJUSTMENT

### SWITCH ANGLE REMOVAL

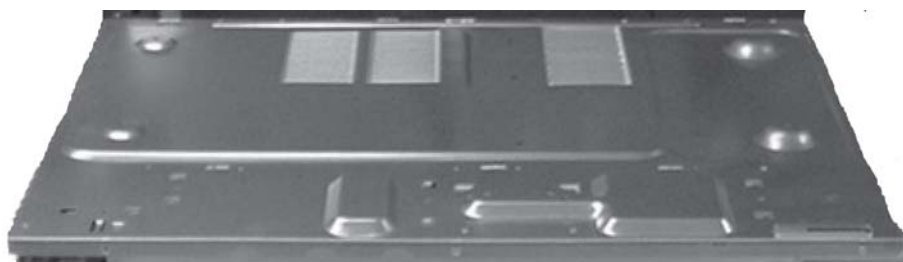
(Locate either the right or left switch angle)

1. Follow the Microwave Drawer disassembly as previously stated.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. To remove switch, remove screw (1) holding switch to switch angle (**Fig. S-1**).
5. To replace switch angle, remove bottom cover and remove the 2 screws holding the switch lever (**Fig. S-2**).
6. Proceed in reverse to reinstall.
7. Adjust switch.

Fig. S-1



Fig. S-2



## ACTUATOR REMOVAL/ADJUSTMENT

1. Follow the Microwave Drawer disassembly as previously stated.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Locate either the right or left actuator and remove the 2 screws holding the actuator to the door support angles.
5. Replace with the new actuator (**Fig. A-3**).

### Actuator adjustment

6. It is very critical that proper adjustment is made to actuator.
7. Adjust each actuator to fully depress ("0" gap) switch lever switches on left and right side (**Fig. A-4**).

**NOTE:** If this adjustment is not adjusted correctly, it will effect the performance of the Auto Drawer.

Fig. A-3

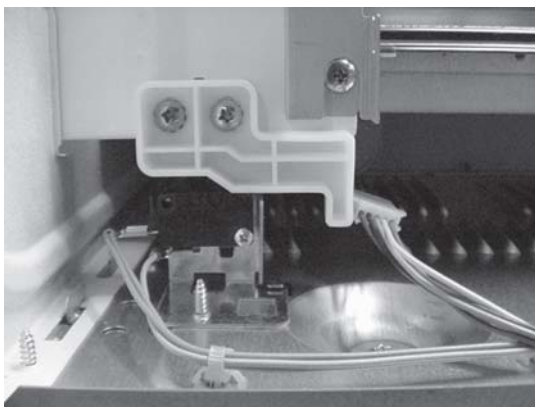
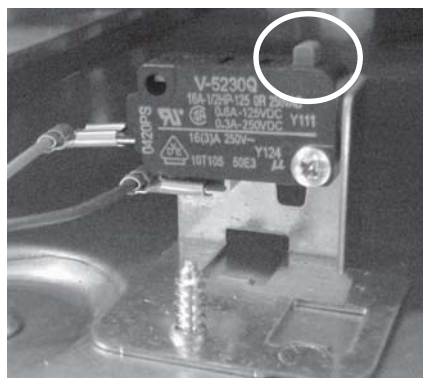
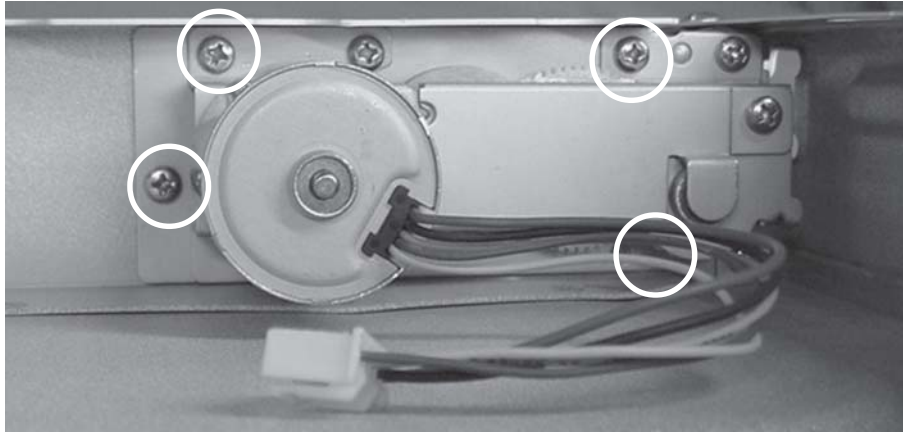


Fig. A-4



## AUTO DRAWER GEAR REMOVAL

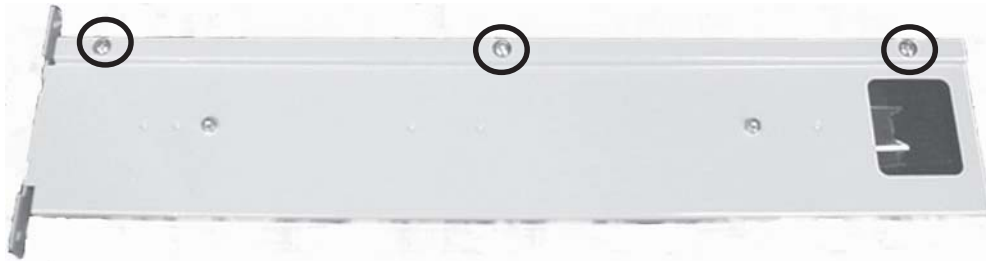
1. Follow the Microwave Drawer disassembly as previously stated.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Unhook wiring Auto Drawer Gear.
5. Remove the (4) screws holding the auto drawer gear to the bottom cavity angle (**Fig. G-1**).
5. Pull drawer gear from cavity angle.
6. The drawer gear is now free.
7. Proceed in reverse to reinstall the Auto Drawer Gear taking care that the gear teeth are set into the cavity angle correctly.



**Fig. G-1**

## RACK GEAR REMOVAL

1. Follow the Microwave Drawer disassembly as previously stated.
2. Open the drawer and keep it open.
3. To discharge the high voltage capacitor, wait for 60 seconds.
4. Remove the Microwave Drawer by following steps 1, 2, 5, 8, 9 & 10 as instructed under "DRAWER ASSEMBLY AND CHOKE REMOVAL".
5. Remove the (3) screws holding the Rack Gear to the bottom slide rail (**Fig. G-2**).
7. Proceed in reverse to reinstall the new Rack Gear.



**Fig. G-2**

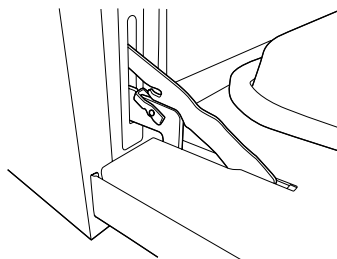


## OVEN DOOR REMOVAL

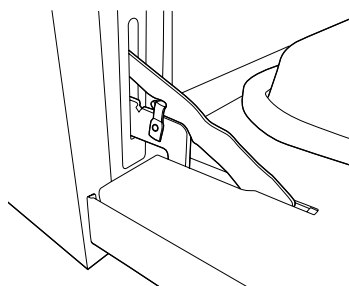
### OVEN DOOR ASSEMBLY REMOVAL

1. Disconnect the power supply cord.
2. Open the door to the fully opened position (**Fig. O-1**).
3. Pull the lock located on both hinge supports up and engage in the hook of the hinge levers. You may have to apply a little downward pressure on the door to pull the locks fully over the hooks (**Fig. O-2**).
4. Grab the door by the sides, pull the bottom of the door up and toward you to disengage the hinge supports. Keep pulling the bottom of the door toward you while rotating the top of the door toward the range to completely disengage the hinge levers (**Fig. O-3**).
5. Proceed in reverse to reinstall the door.
6. Make sure the hinge supports are fully engaged before unlocking the hinge levers.

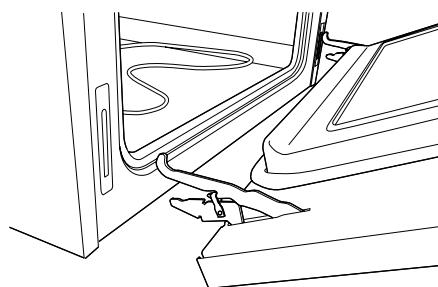
**Fig. O-1**



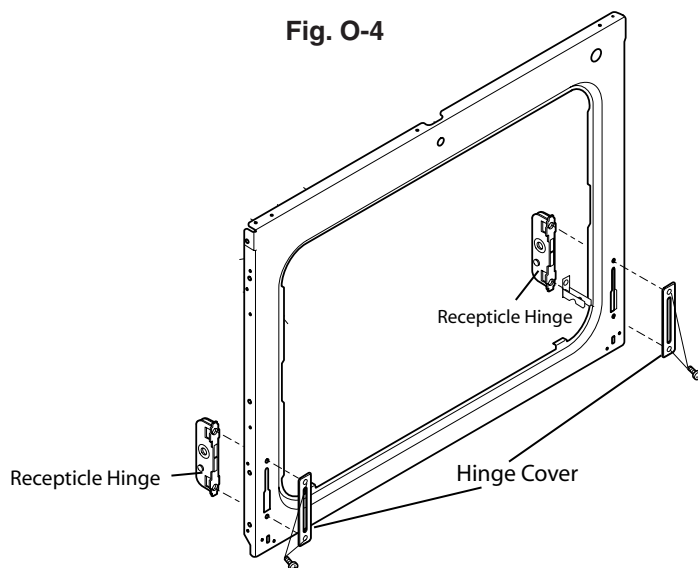
**Fig. O-2**



**Fig. O-3**

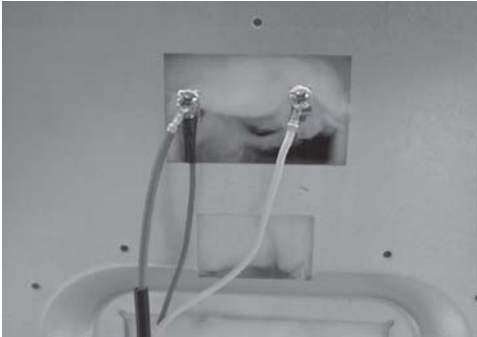


**Fig. O-4**



## OVEN BAKE ELEMENT REMOVAL

1. Disconnect the power supply cord.
2. Refer to the disassembly instructions as previously stated.
3. Disconnect the wires by removing (2) nuts from element (**Fig. O-5**)
4. Remove the (2) screws holding the element from inside the oven (**Fig. O-6**).
5. Pull the Element into the oven.
6. Proceed in reverse to reinstall the Bake Element.



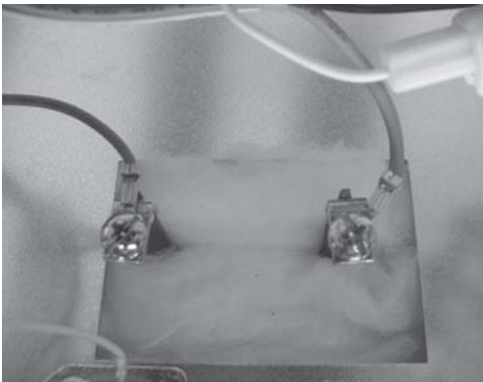
**Fig. O-5**



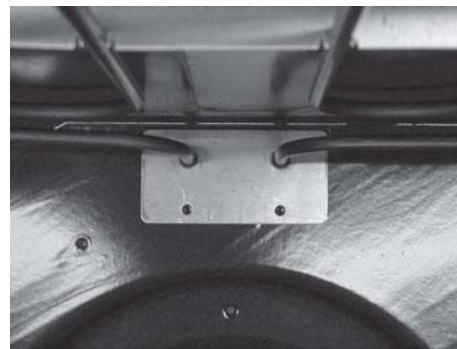
**Fig. O-6**

## OVEN BROIL ELEMENT REMOVAL

1. Disconnect the power supply cord.
2. Refer to the disassembly instructions as previously stated.
3. Disconnect the wires by removing (2) nuts from element (**Fig. O-7**)
4. Remove the (2) screws holding the element from inside the oven (**Fig. O-8**).
5. Pull the Element into the oven.
6. Proceed in reverse to reinstall the Broil Element.



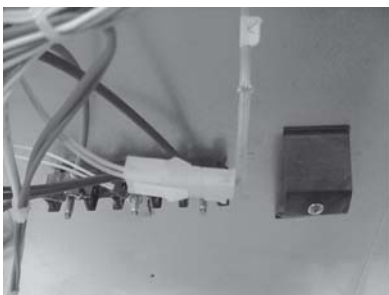
**Fig. O-7**



**Fig. O-8**

## THERMISTOR REMOVAL

1. Disconnect the power supply cord.
2. Refer to the disassembly instructions as previously stated.
3. Unhook rear Molex wiring from Thermistor (**Fig. O-9**)
4. Remove tape from Thermistor rear hole.
5. Remove the (2) screws holding the Thermistor from inside the oven (**Fig. O-10**).
6. Pull the Thermistor into the oven.
7. Proceed in reverse to reinstall the Thermistor.



**Fig. O-9**



**Fig. O-10**

## BLOWER MOTOR REMOVAL

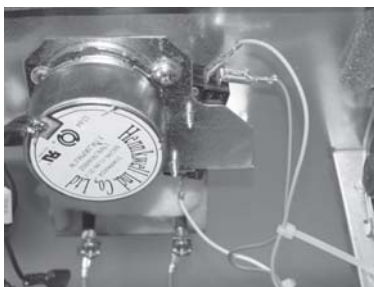
1. Disconnect the power supply cord.
2. Refer to the disassembly instructions as previously stated.
3. Unhook all wiring from Blower Motor (**Fig. O-11**)
4. Remove tape from Thermistor rear hole.
5. Remove the (2) screws holding the Blower Motor to the Rear Plate.
6. The Blower Motor is now free.
7. Proceed in reverse to reinstall the Blower Motor.



**Fig. O-11**

## LOCK MOTOR REMOVAL

1. Disconnect the power supply cord.
2. Refer to the disassembly instructions as previously stated.
3. Unhook all wiring from Lock Motor (**Fig. O-12**).
4. Remove the (2) screws holding the Lock Motor to the Rear Plate.
5. Pull Lock Motor from Lock Motor Shaft.
6. The Lock Motor is now free.
7. Proceed in reverse to reinstall the Lock motor.

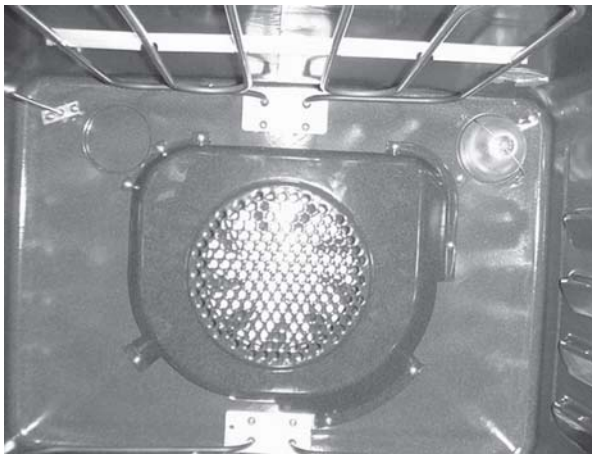


**Fig. O-12**



## CONVECTION MOTOR/IMPELLER BLADE REMOVAL

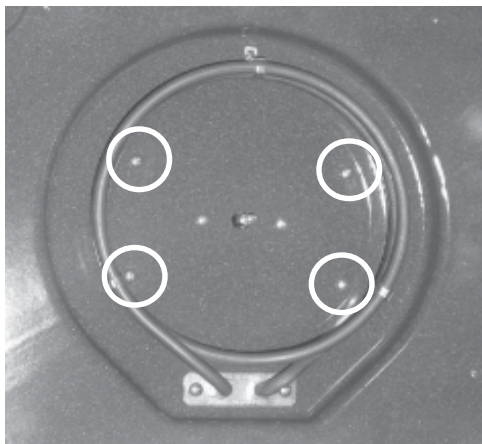
1. Disconnect the power supply cord.
2. Refer to the disassembly instructions as previously stated.
3. Unhook all wiring from convection Motor (**Fig. C-16**).
4. Remove the (8) screws holding the convection cover on from inside the oven (**Fig. C-13**).
5. Remove the (2) screws holding the convection heater in place (if necessary) (**Fig. C-14**).
6. Unscrew the convection fan nut by turning it clockwise (**Fig. C-14**).
7. Once the convection blade is removed, unscrew the (4) screws holding the convection motor in place (**Fig. C-15**).
8. The Lock Motor is now free.
9. Remove the "E" retaining clip and (2) washers holding the impeller blade on to the convection motor shaft (**Fig. C-16**).
9. Proceed in reverse to reinstall the convection motor.



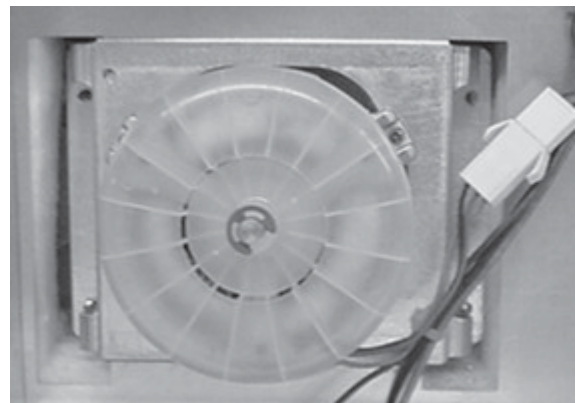
(Fig. C-13)



(Fig. C-14)



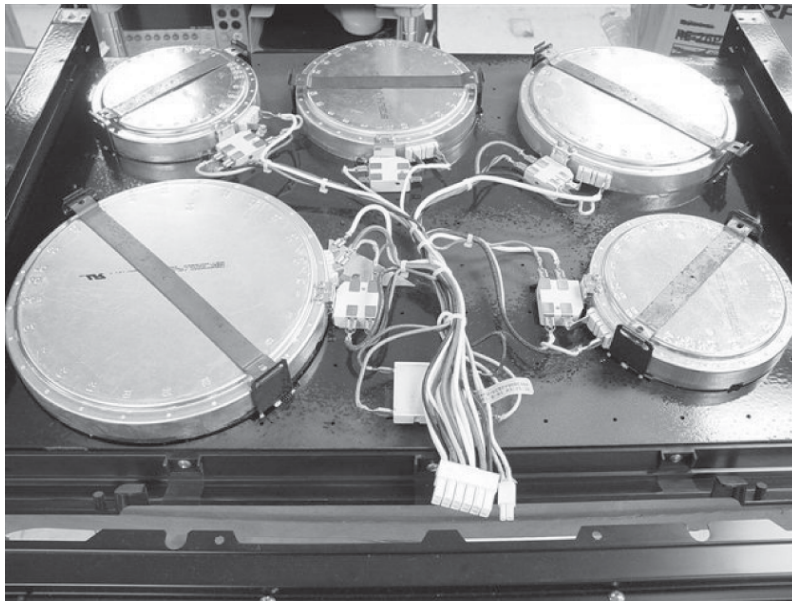
(Fig. C-15)



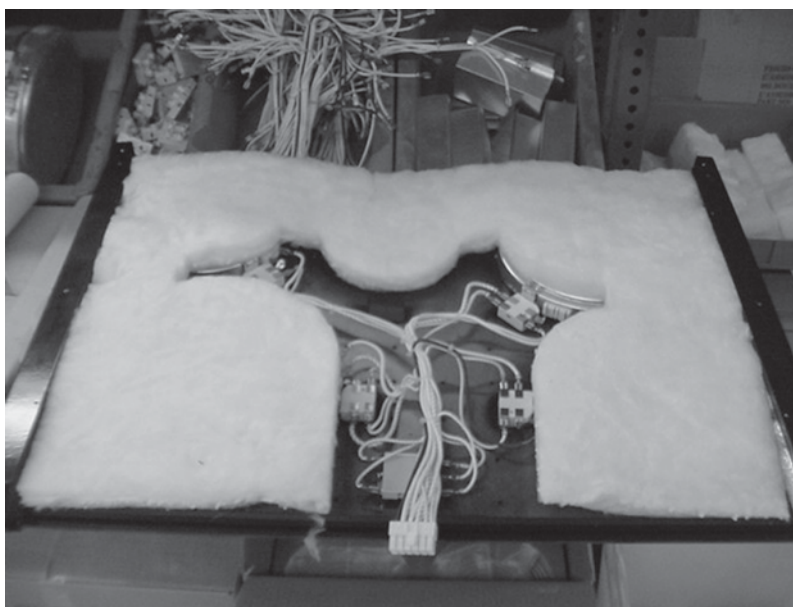
(Fig. C-16)

## COOK TOP RADIANT HEATERS/HOT SURFACE INDICATOR REMOVAL

1. Disconnect the power supply cord.
2. Refer to the disassembly instructions as previously stated.
3. After Cook Top Assembly is free, turn upside down (glass side down) on a protective surface to prevent scratching (**Fig. O-13**).
4. Remove the (10) screws from Bottom Plate and place to the side.
5. Remove Heater Protect Cover (**Fig. O-14**).
6. Remove necessary spring strap from Radiant Element.
7. Unhook Radiant Element or Hot Surface Indicator wiring.
8. The Radiant Elements are now free.
9. Proceed in reverse to reinstall the Radiant Elements and/or Hot Surface Indicator.



**Fig. O-13**

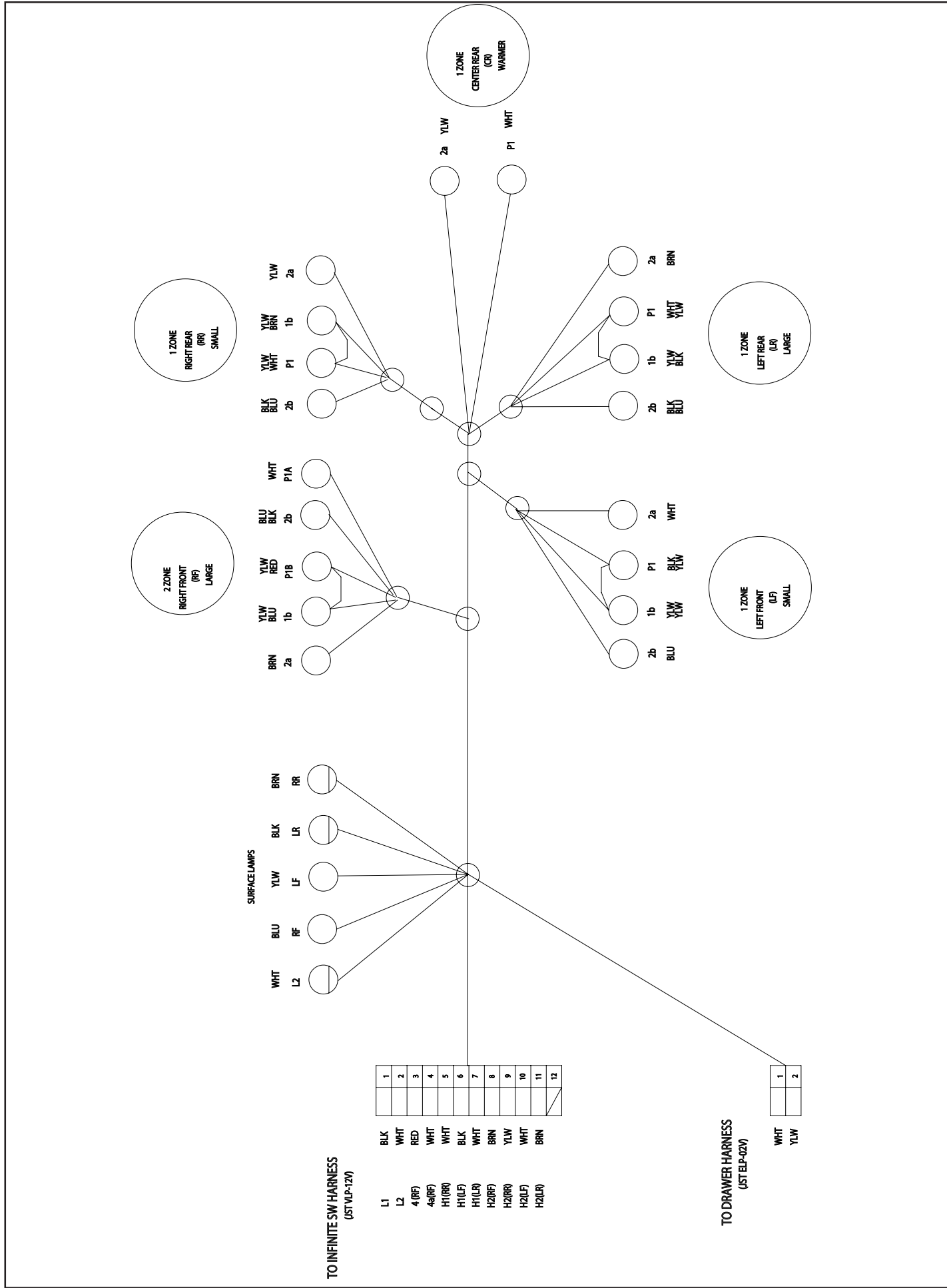


**Fig. O-14**

**VLR-12V**  
**(TO COOKTOP HARNESS)**



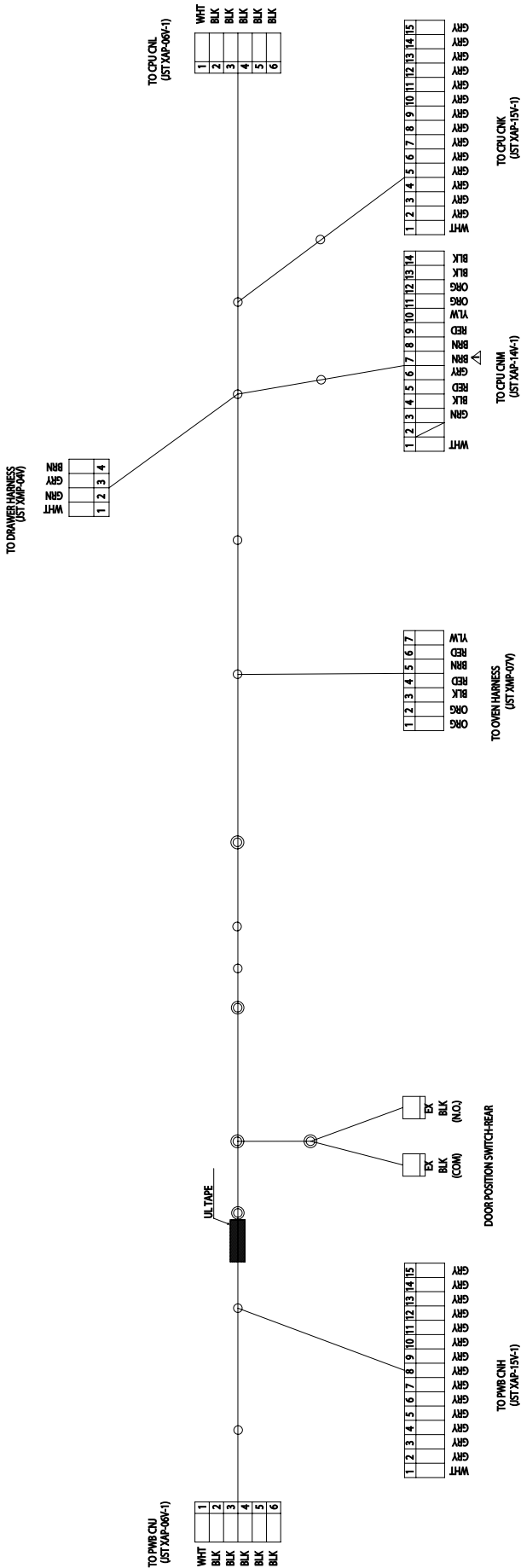
COOK TOP WIRING DIAGRAM



KB-3411JS  
KB-3411JK  
KB-3411JW

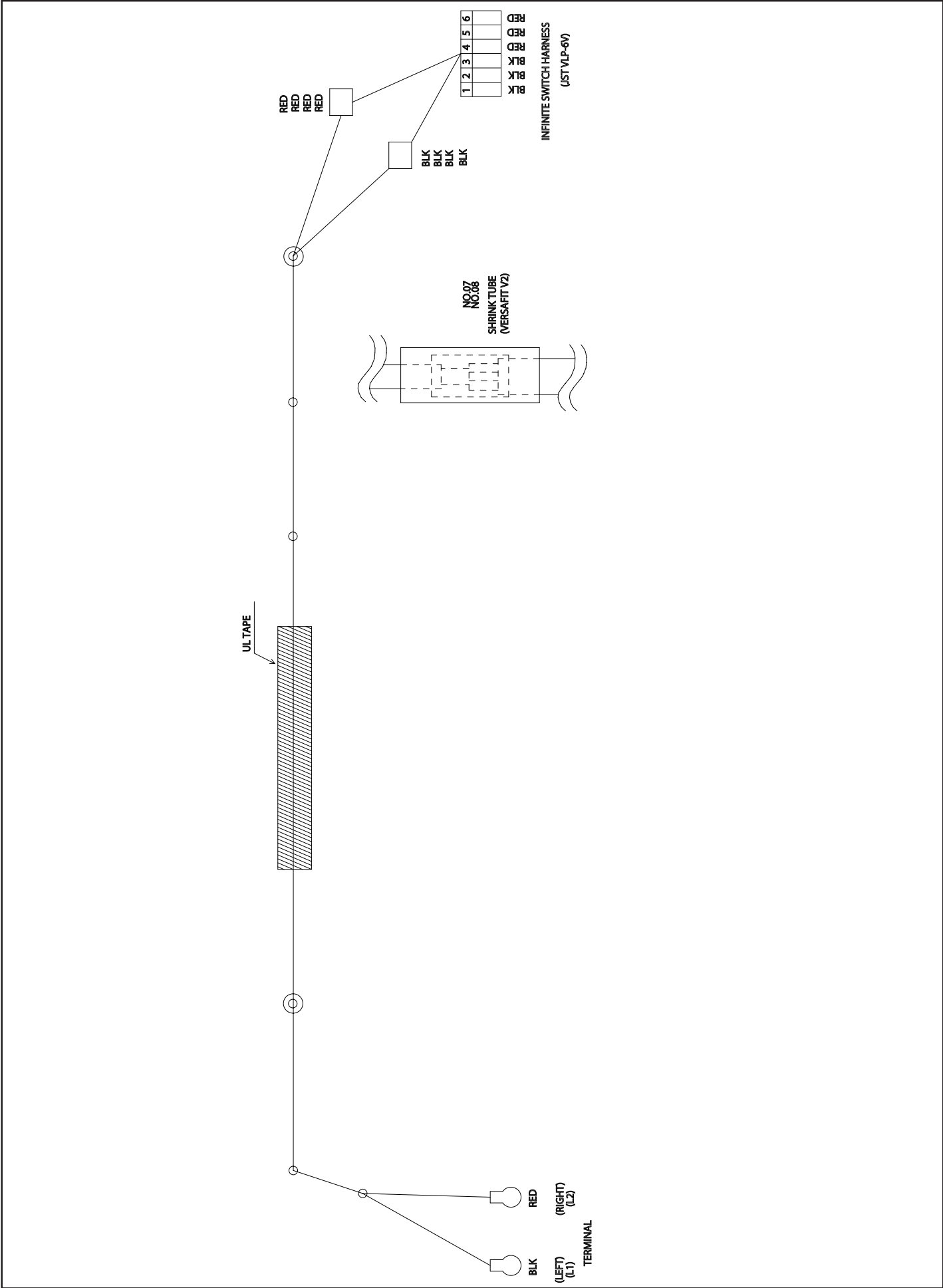


MICROWAVE DRAWER WIRING DIAGRAM



RANGE POWER SUPPLY WIRING DIAGRAM

KB-3411JS  
KB-3411JK  
KB-3411JW







39

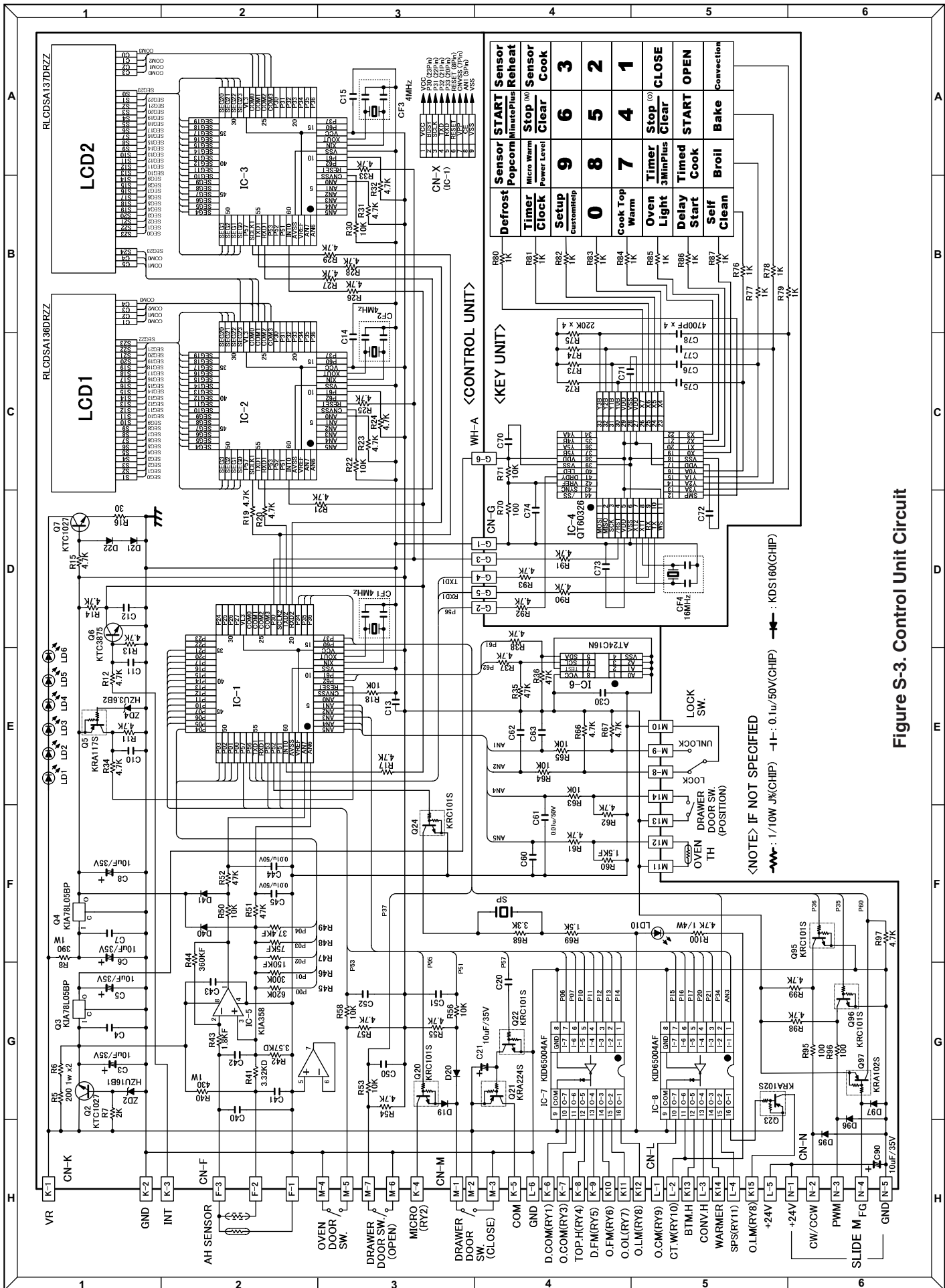


Figure S-3. Control Unit Circuit

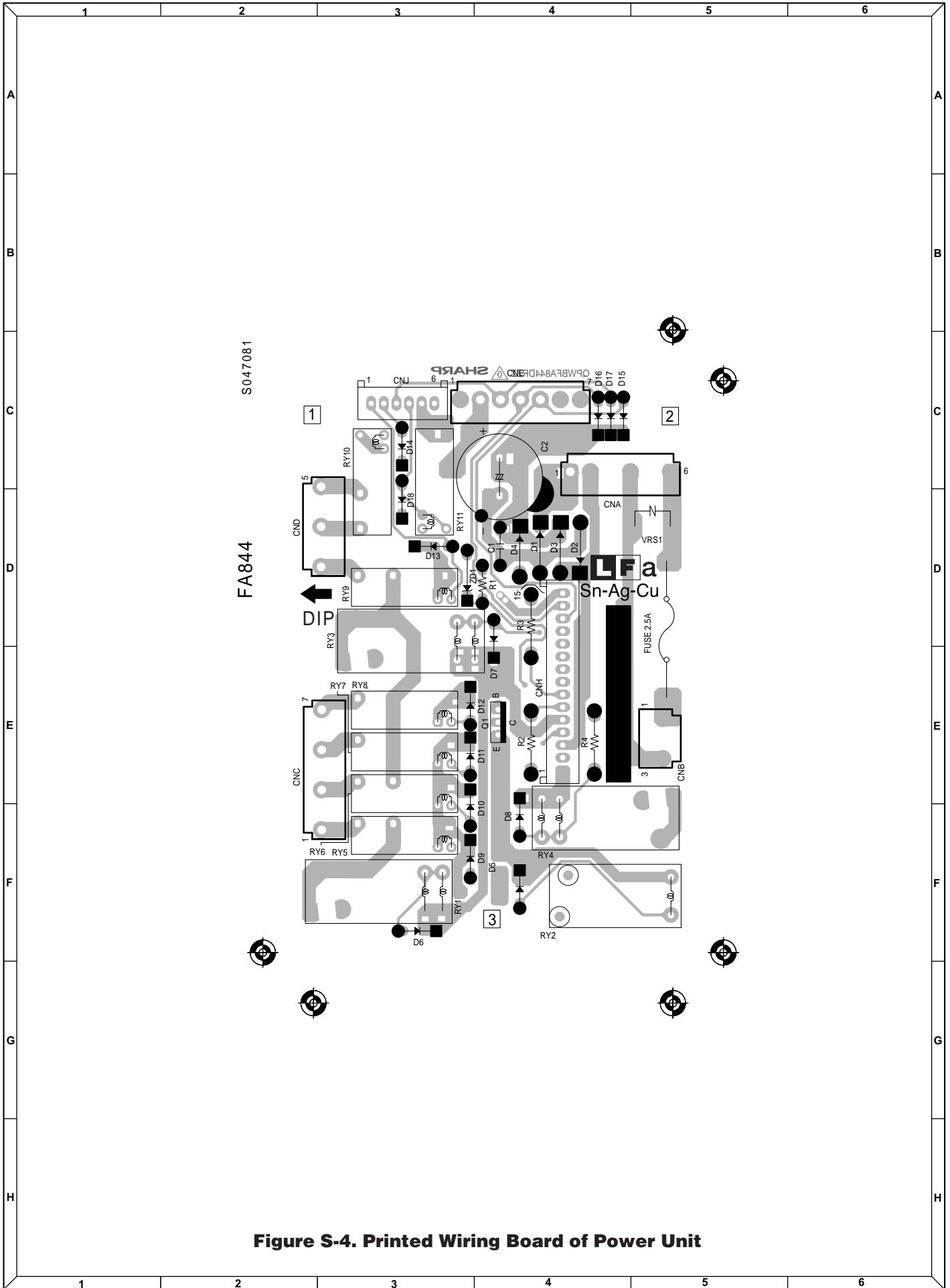


Figure S-4. Printed Wiring Board of Power Unit



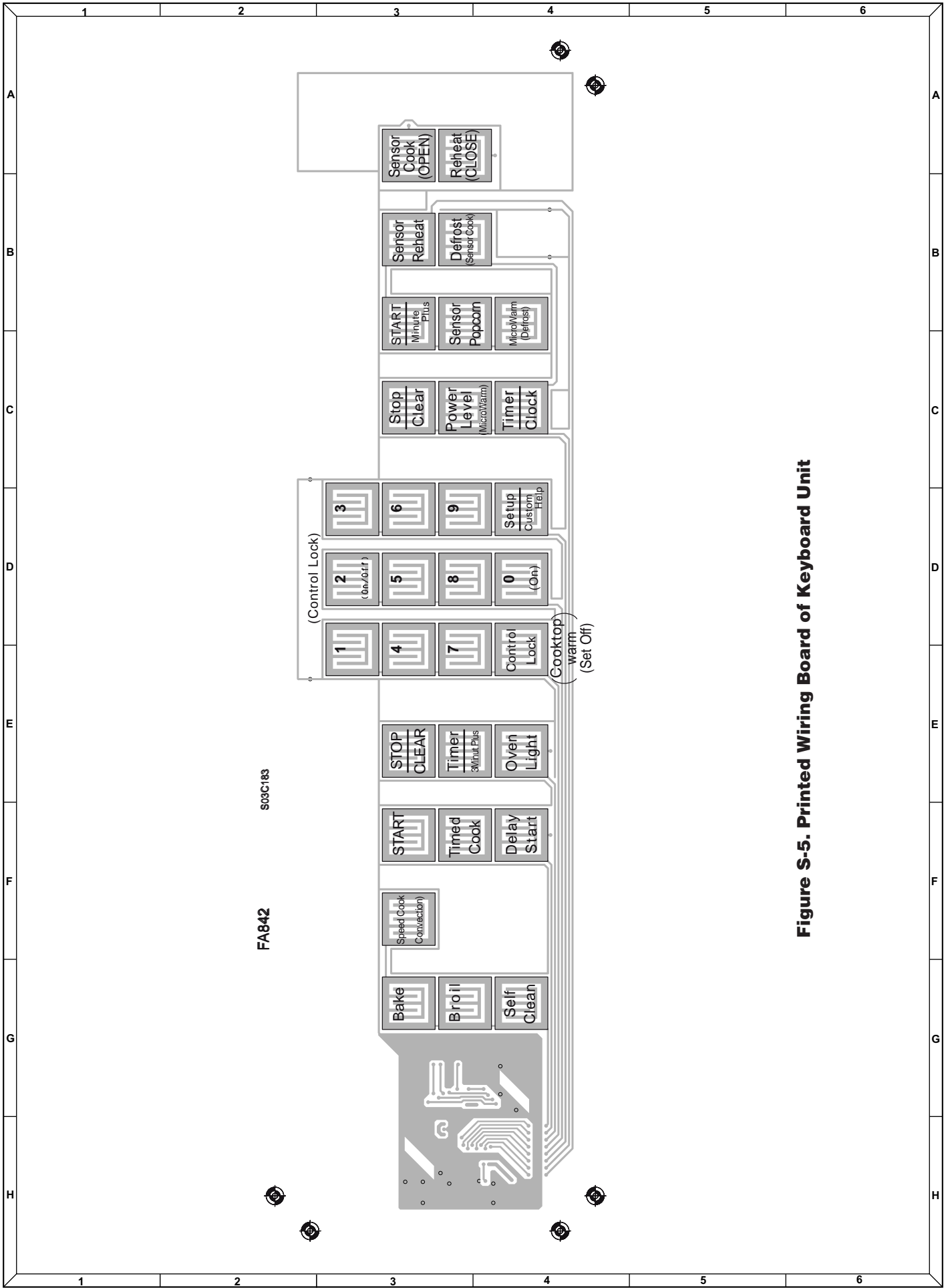


Figure S-5. Printed Wiring Board of Keyboard Unit

## CONTROL PANEL PARTS LIST

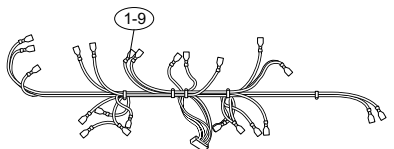
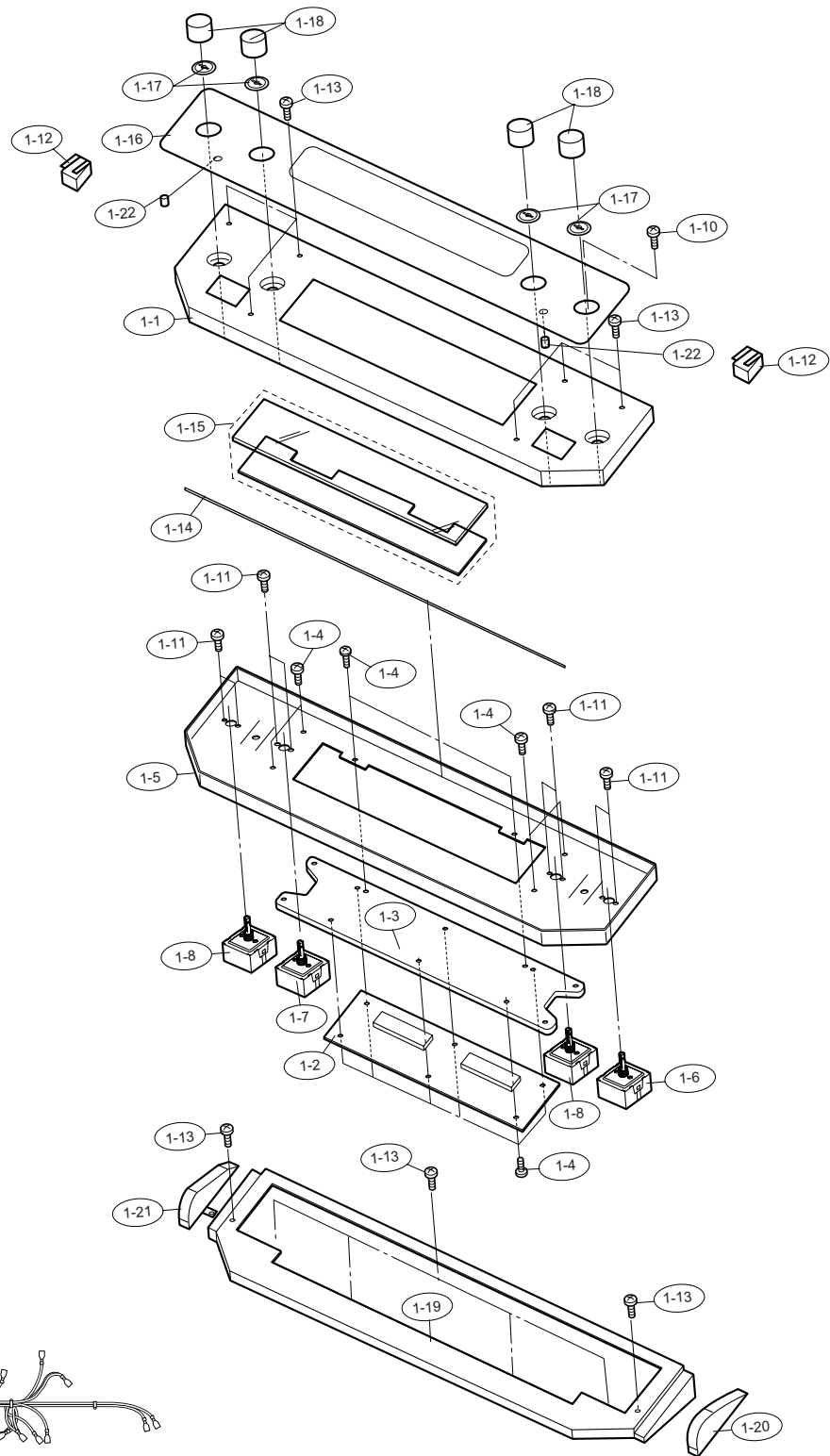
**Note: The parts marked “Δ” may cause undue microwave exposure.**

**The parts marked “\*” are used in voltage more than 250V.**

**“§” MARK: PARTS DELIVERY SECTION**

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
1- 1	HPNLCB200MRF0	M	Control panel mold	1	AS
1- 2	DPWBFB135MRU0	M	Control unit	1	BY
1- 3	LHLD-B027MRF0	M	PWB holder	1	AN
1- 4	XEPSD30P08XS0	M	Screw : 3mm x 8mm	6	AA
1- 5	LANGQB064MRP0	M	Key fixing angle	1	AN
1- 6	QSWTEB002MRE0	M	Double control	1	AW
1- 7	QSWTEB003MRE0	M	2000W control	1	AR
1- 8	QSWTEB004MRE0	M	1200W control	2	AR
1- 9	FW-VZB259MRE0	M	C/P harness	1	BA
1-10	XBTSDB40P06000	M	Screw : 8mm x 6mm	8	AA
1-11	XCTSD40P08000	M	Screw : 8mm x 8mm	4	AA
1-12	RLMP-B005MRE0	M	Indicator lamp	2	AF
1-13	XOTSE40P12000	M	Screw	6	AA
1-13	XCTSF50P12000	M	Optional oversized screw	6	AA
1-14	PSEL-B001MRE0	M	Gasket, dark gray	1	AN
1-15	FUNTKB441MRK0	M	Glass key unit [KB3411JS] [KB3411JK]	1	BP
1-15	FUNTKB442MRK0	M	Glass key unit [KB3411JW]	1	BP
1-16	HDECQB001MRR0	M	Glass key deco [KB3411JS]	1	AK
1-16	HDECQB056MRR0	M	Glass key deco [KB3411JK]	1	AK
1-16	HDECQB057MRR0	M	Glass key deco [KB3411JW]	1	AK
1-17	LRTNPB001MRF0	M	Retainer [KB3411JS] [KB3411JK]	4	AD
1-17	LRTNPB002MRF0	M	Retainer [KB3411JW]	4	AD
1-18	FKNBKB005MRK0	M	Control knob [KB3411JS] [KB3411JK]	4	AD
1-18	FKNBKB006MRK0	M	Control knob [KB3411JW]	4	AD
1-19	GWAKPB202MRF0	M	C/P frame [KB3411JS] [KB3411JK]	1	AR
1-19	GWAKPB207MRF0	M	C/P frame [KB3411JW]	1	AR
1-20	HDEC-B007MRF0	M	C/P support R [KB3411JS] [KB3411JK]	1	AF
1-20	HDEC-B010MRF0	M	C/P support R [KB3411JW]	1	AF
1-21	HDEC-B008MRF0	M	C/P support L [KB3411JS] [KB3411JK]	1	AF
1-21	HDEC-B011MRF0	M	C/P support L [KB3411JW]	1	AF
1-22	PLNS-B003MRE0	M	Lens	2	AA

## CONTROL PANEL



## CONTROL PANEL HARNESS



## COOK TOP PARTS LIST

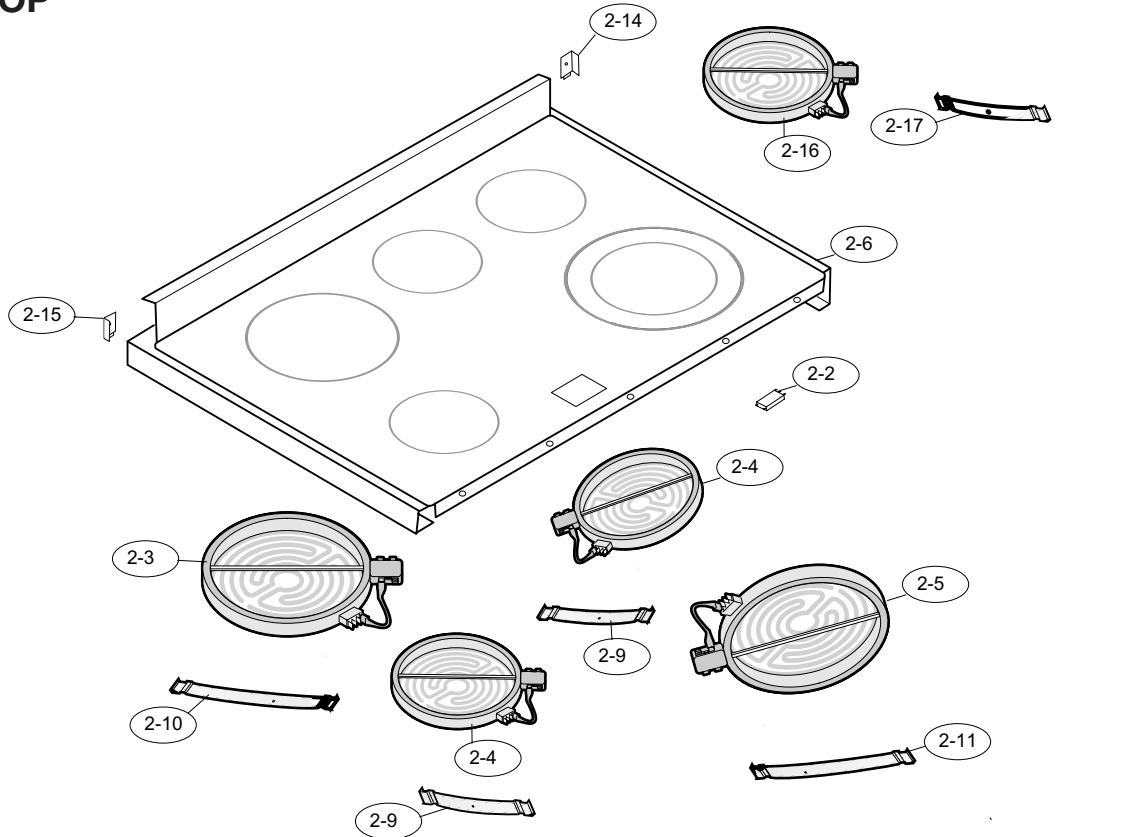
Note: The parts marked "Δ" may cause undue microwave exposure.

The parts marked "\*" are used in voltage more than 250V.

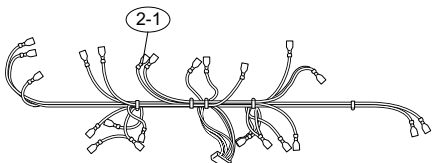
"§" MARK: PARTS DELIVERY SECTION

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
2- 1	FW-VZB249MRE0	M	Cook top harness	1	AZ
2- 2	RLMP-B001MRE0	M	Surface indicator	1	AU
* 2- 3	RHET-B001MRE0	M	Radiant heater (2000 w)	1	BA
* 2- 4	RHET-B002MRE0	M	Radiant heater (1200 w)	2	AZ
2- 5	RHET-B003MRE0	M	Radiant heater (Dual)	1	BD
2- 6	FANG-B009MRY0	M	Cook top glass assy [KB3411JS] [KB3411JK]	1	CD
2- 6	FANG-B010MRY0	M	Cook top glass assy [KB3411JW]	1	CF
2- 7	PFPF-B006MRE0	M	Heat protect	1	AH
2- 8	PCOVPB122MRP0	M	Heat protect cover	1	BD
2- 9	MLEVPB018MRE0	M	6" spring strap	2	AH
2-10	MLEVPB020MRE0	M	8" spring strap	1	AH
2-11	MLEVPB021MRE0	M	9" spring strap	1	AH
2-12	XOTSE40P12000	M	Screw	6	AA
2-13	LX-CZB027MRE0	M	Shoulder screw	4	AA
2-14	HDEC-B014MRF0	M	Right end cap [KB3411JS] [KB3411JK]	1	AK
2-14	HDEC-B016MRF0	M	Right end cap [KB3411JW]	1	AK
2-15	HDEC-B015MRF0	M	Left end cap [KB3411JS] [KB3411JK]	1	AK
2-15	HDEC-B017MRF0	M	Left end cap [KB3411JW]	1	AK
2-16	RHET-B008MRE0	M	Radiant heater warm	1	BB
2-17	MLEVPB019MRE0	M	7" spring strap	1	AK

## COOK TOP



## COOK TOP HARNESS



Actual wire harness may be different from illustration.

# MICROWAVE DRAWER PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.

The parts marked "\*" are used in voltage more than 250V.

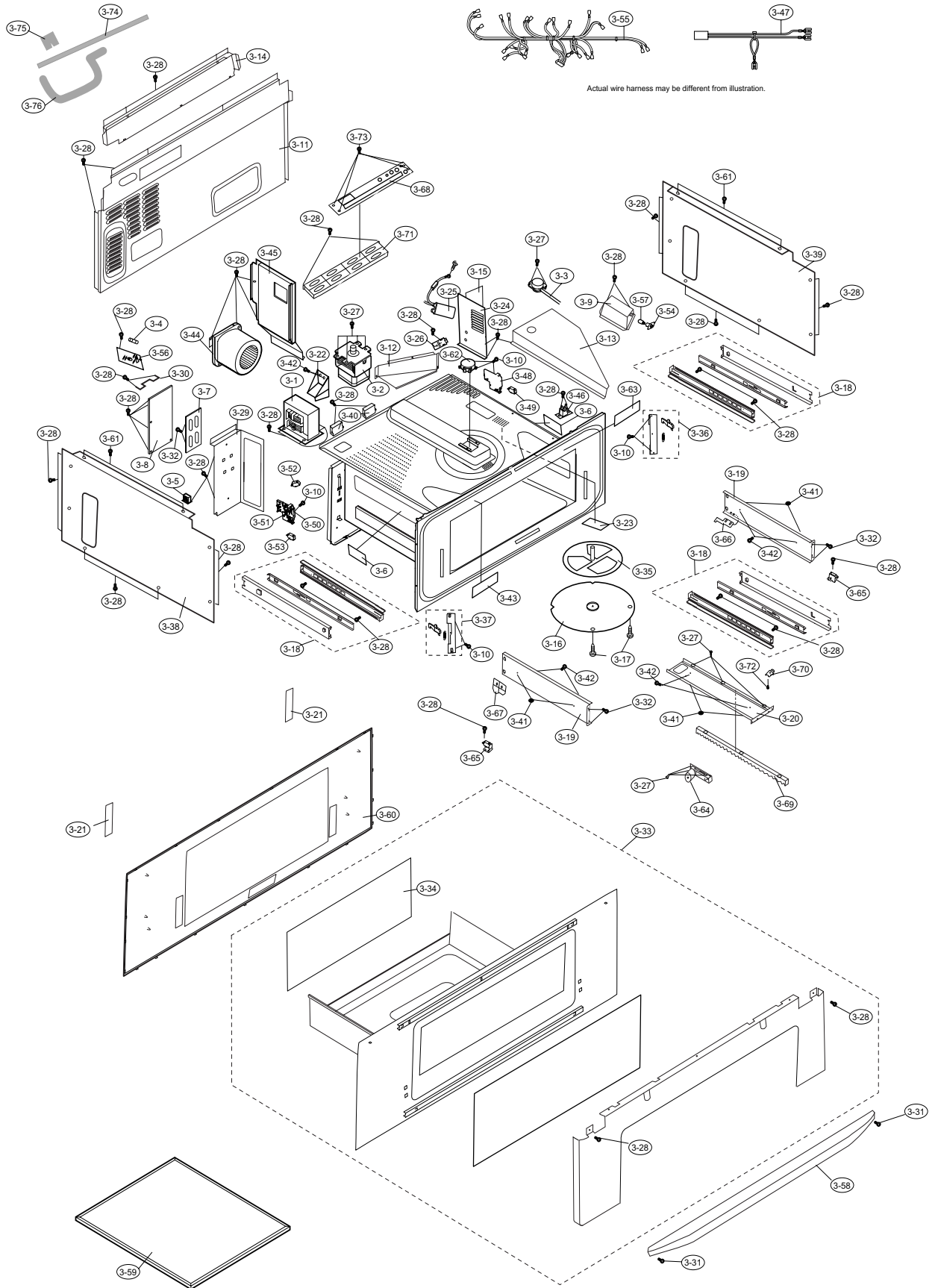
"§" MARK: PARTS DELIVERY SECTION

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
Δ 3- 1	RTRN-B083MRE0	M	Transformer	1	BE
3- 2	RV-MZA288WRE0	M	Magnetron	1	BK
3- 3	FDTCTA234WRKZ	M	Sensor assy	1	AP
3- 4	FFS-BA018/KIT	M	Monitor switch (V-16G-2C25) with fuse (20A) assembly	1	AF
3- 5	RTRNPA006WRZZ	M	Touch control transformer	1	AP
3- 6	TCAUAB050MRR0	M	Monitor caution label	2	AD
3- 7	LHLD-B028MRF0A	M	Power supply unit holder	1	AH
3- 8	DPWBFB133MRU0	M	Power supply	2	BD
3- 9	LANGTB073MRP0	M	Oven lamp angle	1	AF
3-10	LX-CZ0052WRE0	M	Screw/washer	6	AA
3-11	GCABDB001MRP0	M	Back plate	1	BB
3-12	PDUC-B141MRP0	M	Mag duct	1	AE
3-13	PDUC-B142MRP0	M	Sensor duct	1	AK
3-14	PDUC-B147MRP0	M	Exhaust duct A	1	AK
3-15	PDUC-B148MRP0	M	Exhaust duct B	1	AF
3-16	FCOVBP002MRY0	M	Stir cover assy	1	AM
3-17	PCLICB003MRE0	M	Canoe clip	3	AB
3-18	MSLIFB001/KIT	M	Slide rail	3	AU
3-19	LANGTB112MRP0	M	Door support angle A	2	AW
3-20	LANGTB113MRP0	M	Door support angle B	1	AW
3-21	GCOVHB051MRF0	M	Door support cover	2	AB
3-22	PSKR-B018MRP0	M	Magnetron air guide	1	AC
3-23	PFILWB005MRP0	M	Lamp filter	1	AB
3-24	LANGTB076MRP0	M	Partition angle	1	AK
* 3-25	FC-QZB048MRK0	M	HVC assy	1	AP
3-26	LBNDKB007MRP0	M	HVC band	1	AB
3-27	LX-BZA041WRE0	M	Screw	6	AA
3-28	XOTSE40P12000	M	Screw	68	AA
3-29	LANGTB114MRP0	M	Partition angle L	1	AK
3-30	LANGQA581WRPZ	M	Noise unit angle	1	AD
3-31	XOTSE40P16000	M	Screw	4	AA
3-32	XOTSD40P12RV0	M	Power unit assy screw	4	AA
3-33	DDORFB099MRK0A	M	Door assy [KB3411JS]	1	BR
3-33	DDORFB100MRK0	M	Door assy [KB3411JK]	1	BR
3-33	DDORFB101MRK0	M	Door assy [KB3411JW]	1	BQ
3-34	PSHEPB184MRE0	M	Sealer film	1	AQ
3-35	FFAN-B008MRK0	M	Stirrer fan assy	1	AK
3-36	FANGTB010MRK0	M	Latch angle assy R	1	AH
3-37	FANGTB011MRK0	M	Latch angle assy L	1	AH
3-38	LANGTB093MRP0	M	Cooktop stay L	1	AY
3-39	LANGTB094MRP0	M	Cooktop stay R	1	AY
3-40	RRLYDA012DRZZ	M	Heater relay A	2	AH
3-41	LX-NZB006MRE0	M	Cap nut	6	AA
3-42	XHTSD40P08RV0	M	Screw	4	AA
3-43	TCAUKB001MRR0	M	Stirrer cover cleaning label	1	AA
3-44	FMOTEA494WRKZ	M	Fan motor	1	AZ
3-45	LANGTB077MRP0	M	Fan motor angle	1	AG
3-46	RTHM-A135WRZZ	M	Magnetron thermal cut-out	1	AD
3-47	FW-VZB253MRK0	M	Harness assy	1	AV
3-48	PHOK-A079WRF0	M	Latch hook R	1	AH
3-49	QSW-MA085WRE0	M	Switch	1	AE
3-50	PHOK-A080WRF0	M	Latch hook L	1	AF
3-51	MLEVPA214WRF0	M	Switch lever L	1	AK
3-52	QSW-MA--WRE0	M	Monitor switch - must replace by assy. (3-4)	1	AE
3-53	QSW-MA085WRE0	M	Switch	4	AE
3-54	QSOCLB010MRE0	M	Lamp socket	1	AG
3-55	FW-VZB263MRE0	M	CPU harness	1	AV
3-56	FPWBFA380WRKZ	M	Noise filter unit	1	AM
3-57	RLMPTA071WRE0	M	Oven lamp	1	AF

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
3-58	JHNDPB052MRM0	M	Door handle [KB3411JS]	1	AS
3-58	JHNDPB054MRM0	M	Door handle [KB3411JK]	1	AS
3-58	JHNDPB055MRM0	M	Door handle [KB3411JW]	1	AS
3-59	FGLSPB002MRY0	M	Oven tray assy	1	BK
3-60	GCOVHB053MRF0	M	Choke cover	1	AM
3-61	LX-CZB027MRE0	M	Shoulder screw	2	AA
3-62	RMOTDA261WRZZ	M	Stirrer motor	4	AH
3-63	TCAUHB009MRR0	M	User caution label	1	AA
3-64	FANGTB012MRK0	M	Auto drawer gear assy	1	BH
3-65	LANGTB105MRP0	M	Switch angle	2	AE
3-66	MACT-B001MRF0	M	Actuator R	1	AD
3-67	MACT-B002MRF0	M	Actuator L	1	AD
3-68	DPWBFC441WRKZ	M	SW power supply	1	CM
3-69	NGERRB002MRF0	M	Rack gear	2	BS
3-70	FROLPB029MRK0	M	Door support roller assy	1	AG
3-71	LHLD-B031MRF0	M	Switch PSU holder	1	AC
3-72	XOTSE40P08000	M	Screw	1	AA
3-73	XEPSD30P10XS0	M	Screw	4	AA
3-74	PCUSUB084MRP0	M	Cushion	1	AG
3-75	PCUSUB086MRP0	M	Cushion	1	AA
3-76	PCUSUB088MRP0	M	Cushion	1	AC

# MICROWAVE DRAWER

## MICROWAVE DRAWER HARNESSES



# OVEN PARTS LIST

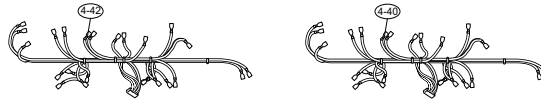
**Note: The parts marked "Δ" may cause undue microwave exposure.**  
**The parts marked "\*" are used in voltage more than 250V.**

**"§" MARK: PARTS DELIVERY SECTION**

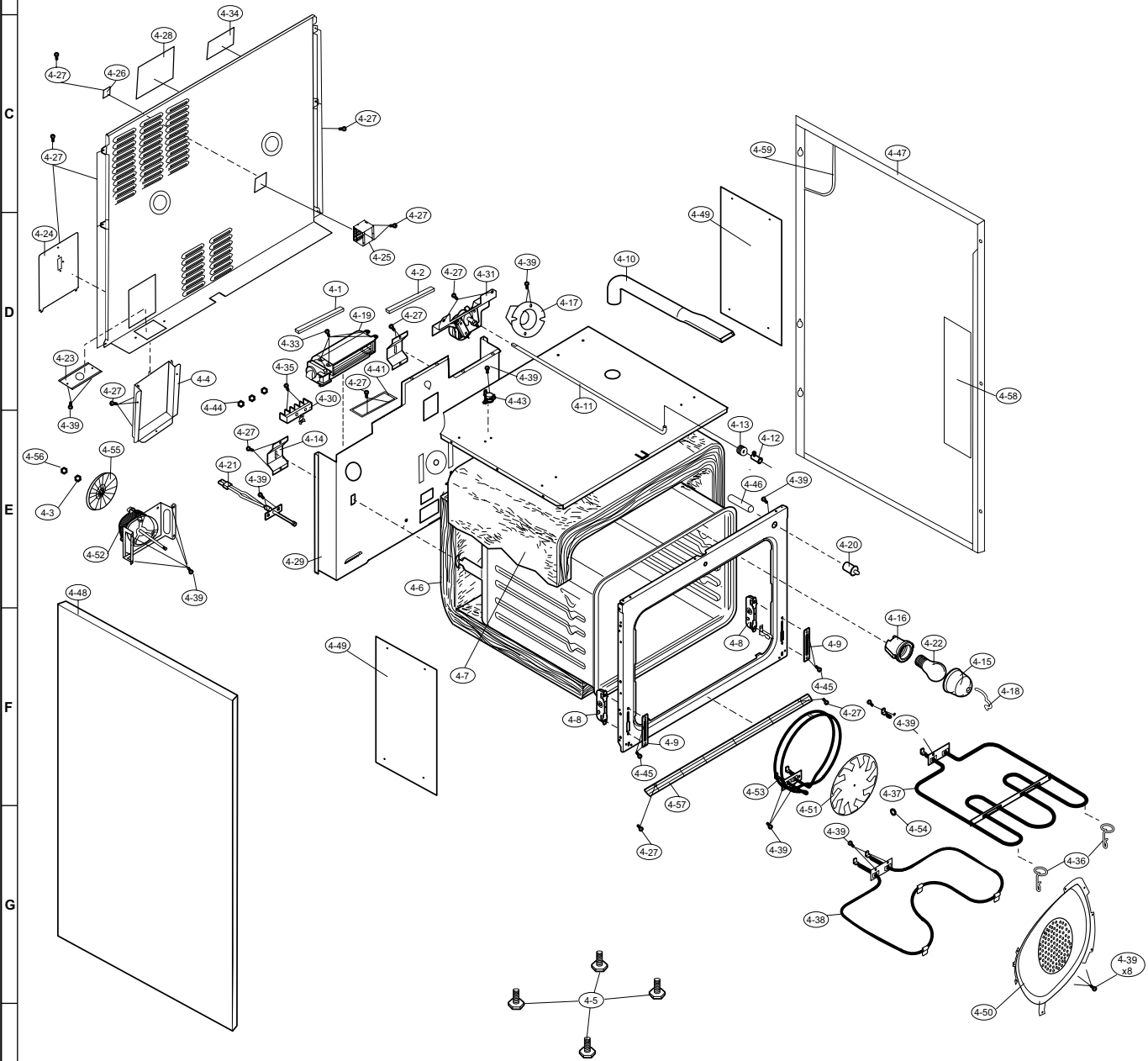
REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
4- 1	PCUSGB050MRP0	M	Thermal cushion	1	AG
4- 2	PCUSGB051MRP0	M	Cross flow motor cushion	1	AG
4- 3	XWHS80-16180	M	Washers	2	AB
4- 4	PCOVBP136MRP0	M	Heat cover	1	BD
4- 5	GLEGPB006MRE0	M	Leveling screw	4	AE
4- 6	PFPF-B012MRE0	M	Heat protect R	1	AW
4- 7	PFPF-B009MRE0	M	Heat protect Top	1	AW
4- 8	FHNG-B052MRE0	M	Receptacle hinge	2	AK
4- 9	PCOVBP131MRE0	M	Hinge cover	2	AD
4-10	PPIFPB003MRE0	M	Vent tube	1	AR
4-11	MROD-B008MRE0	M	Latch rod	1	AM
4-12	LBSHZB001MRE0	M	Bushing	1	AG
4-13	MSPRTB024MRE0	M	Bushing spring	1	AA
4-14	LANGTB079MRP0	M	Oven spring	2	AE
4-15	PCOVBP127MRE0	M	Oven light cover	1	AK
4-16	QSOCLB012MRE0	M	Oven light housing	1	AE
4-17	LANG-B018MRE0	M	Oven light receptacle	1	AH
4-18	LBNDKB011MRE0	M	Light cover retainer	1	AB
4-19	FMOTEB051MRE0	M	Blower motor	1	BF
4-20	QSW-PB002MRE0	M	Light switch	1	AF
4-21	FH-HZB001MRE0	M	Thermister	1	AT
4-22	RLMPTB001MRE0	M	Oven lamp	1	AE
4-23	LANGQB065MRP0	M	Power cord angle	1	AE
4-24	PCOVBP130MRP0	M	Power cover	1	AG
4-25	FSW-MB039MRK0	M	Select switch assy	1	AS
4-26	LANGKA760WRP0	M	Switch lever	1	AG
4-27	XOTSE40P12000	M	Screw	37	AA
4-28	TCAUAB048MRR0	M	DHHS caution label	1	AB
4-29	GCABDB009MRP0	M	Rear plate	1	BE
4-30	QCNCYB001MRE0	M	Terminal block kit	1	AK
4-31	FANG-B003MRE0	M	Latch motor assy	1	AZ
4-32	LANGQB066MRP0	M	Ground plate	1	AD
4-33	LX-BZA041WRE0	M	Screw	4	AA
4-34	TCAUAB057MRR0	M	Anti-tip label	1	AA
4-35	LX-CZB029MRE0	M	Terminal screws	2	AA
4-36	LBNDKB012MRP0	M	Element support hanger	2	AD
4-37	RHET-B006MRE0	M	Top heater (3000 W)	1	AX
4-38	RHET-B009MRE0	M	Bottom heater (2600 W)	1	AW
4-39	XOTWW40P10000	M	Screw	22	AA
4-40	FW-VZB273MRE0	M	Power supply harness	1	BB
4-41	LANGTB092MRP0	M	Motor blower angle	1	AH
4-42	DW-VZB193MRK0	M	Harness assy	1	BE
4-43	QFS-TA038WRE0	M	Oven thermo	1	AK
4-44	LX-NZB007MRE0	M	Terminal block nut	6	AA
4-45	LX-CZB028MRE0	M	Door hinge screw	4	AA
4-46	PCOVWB001MRE0	M	Insulation tube	1	AC
4-47	GCABUB135MRP0A	M	Side cabinet R [KB3411JS] [KB3411JK]	1	BC
4-47	GCABUB138MRP0A	M	Side cabinet R [KB3411JW]	1	BC
4-48	GCABUB136MRP0A	M	Side cabinet L [KB3411JS] [KB3411JK]	1	BC
4-48	GCABUB139MRP0A	M	Side cabinet L [KB3411JW]	1	BC
4-49	PREFHB008MRP0	M	Heat reflector	2	AL
4-50	PDUC-B143MRH0	M	Convection duct	1	AY
4-51	FFAN-B017MRY0	M	Convection fan assy	1	AX
4-52	RMOTEB036MRE0	M	Convection motor	1	BB
4-53	RHET-B005MRE0	M	Convection heater	1	AX
4-54	LX-NZB009MRE0	M	Convection fan assy nut	1	AA
4-55	NFANPB007MRE0	M	Impeller blade	1	AC
4-56	LX-RZB001MRE0	M	"E" retaining clip	1	AB
4-57	PCOVBP145MRF0	M	Front cover	1	AM
4-58	PFPF-B014MRP0	M	Insulation	1	AG
4-59	PCUSUB087MRP0	M	Cushion	1	AE

# OVEN UNIT

## OVEN UNIT HARNESSES



Actual wire harness may be different from illustration.



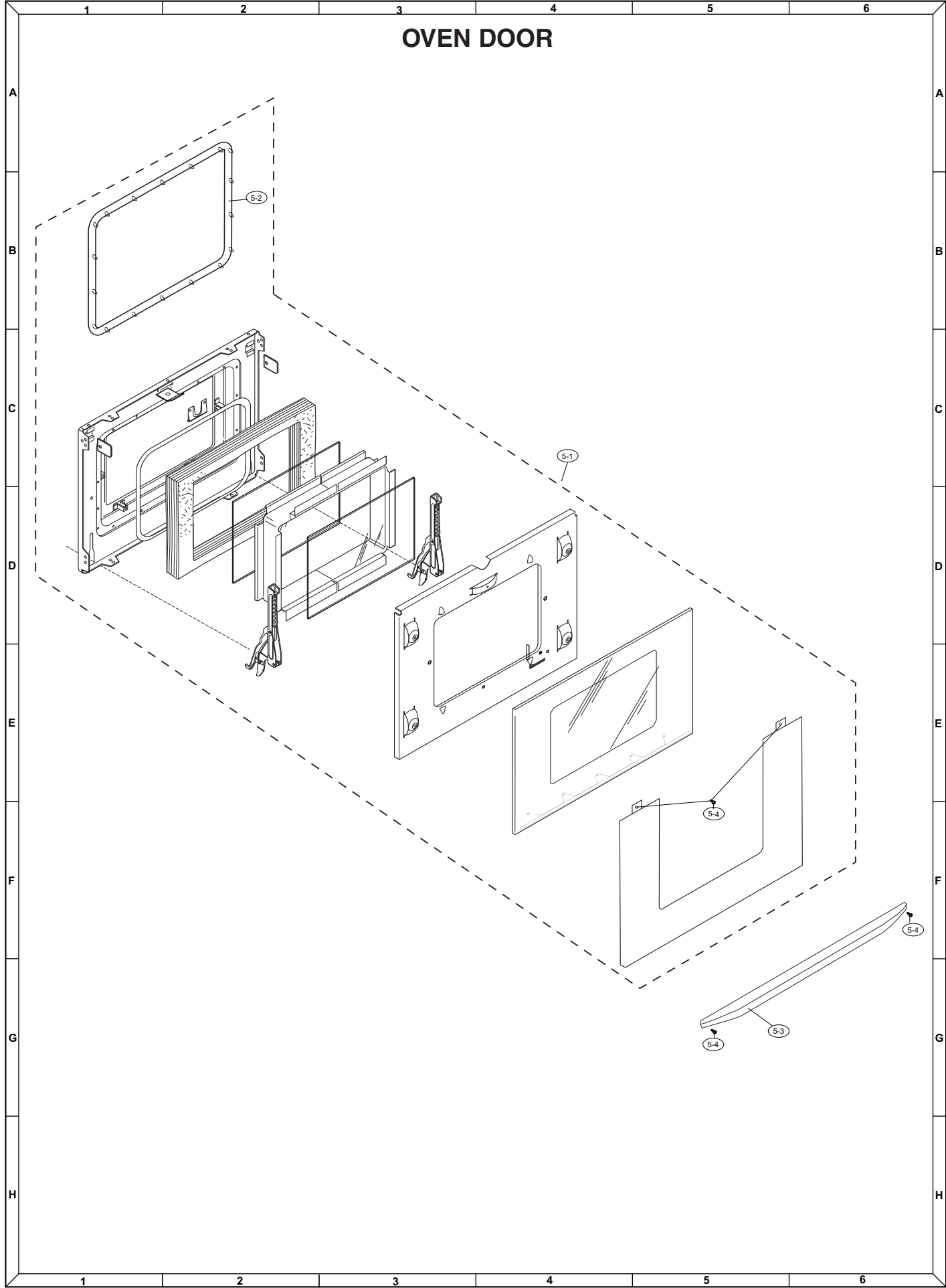


## OVEN DOOR PARTS LIST

**Note:** The parts marked “Δ” may cause undue microwave exposure.  
The parts marked “\*” are used in voltage more than 250V.

“§” MARK: PARTS DELIVERY SECTION

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
5- 1	DDORFB092MRK0	M	Door assy [KB3411JS]	1	BY
5- 1	DDORFB096MRK0	M	Door assy [KB3411JK]	1	BY
5- 1	DDORFB097MRK0	M	Door assy [KB3411JW]	1	BY
5- 2	PPACGB021MRE0	M	Oven door seal gasket	1	AW
5- 3	JHNDPB053MRF0	M	Door handle [KB3411JS]	1	BB
5- 3	JHNDPB056MRF0	M	Door handle [KB3411JK]	1	BB
5- 3	JHNDPB057MRF0	M	Door handle [KB3411JW]	1	BB
5- 4	XOTWW40P12000	M	Screw	6	AA



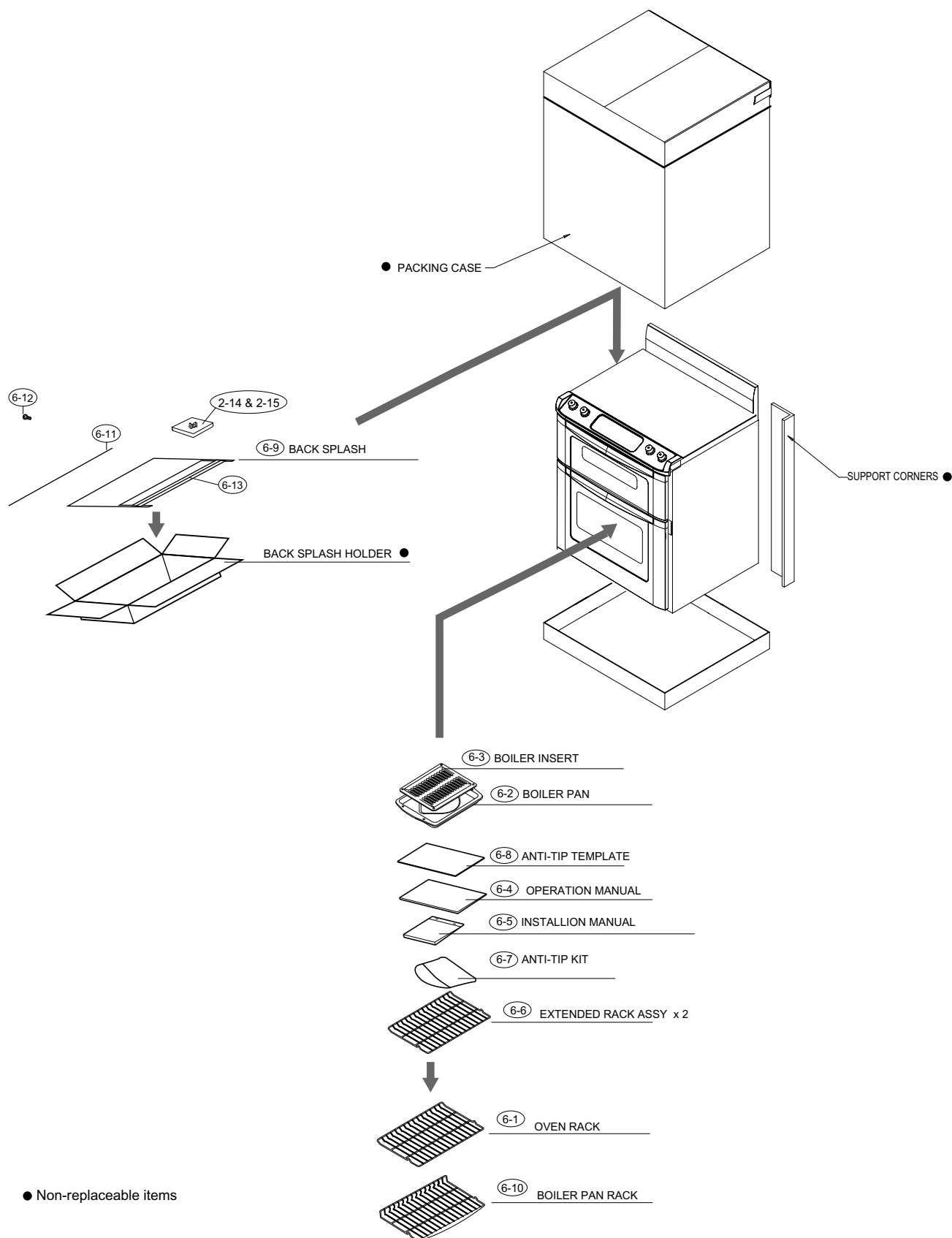
## PACKING PARTS LIST

**Note: The parts marked “Δ” may cause undue microwave exposure.  
The parts marked “\*” are used in voltage more than 250V.**

**"§" MARK: PARTS DELIVERY SECTION**

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
6- 1	UAMI-B013MRM0	M	Rack	2	AV
6- 2	PSLD-B001MRE0	M	Broiler pan insert	1	AW
6- 3	PSRAHB001MRE0	M	Broiler pan	1	AW
6- 4	TINSEB413MRK0	M	Operation manual	1	AM
6- 5	TINSEB390MRR0	M	Installation sheet	1	AG
6- 6	FAMI-B007MRK0	M	Extended rack assy	1	BM
6- 7	FANGKB024MRK0A	M	Anti-tip kit	1	AV
6- 8	TINSEB392MRR0	M	Anti-tip template	1	AD
6- 9	FANG-B004MRT0	M	Back splash [KB3411JS]	1	BQ
6- 9	FANG-B005MRT0A	M	Back splash [KB3411JK]	1	BQ
6- 9	FANG-B006MRT0A	M	Back splash [KB3411JW]	1	BQ
6- 10	UAMI-B014MRM0	M	Broiler pan rack	1	AR
6- 11	PCUSGB052MRF0	M	Rubber seal [KB3411JS] [KB3411JK]	1	AL
6- 11	PCUSGB056MRF0	M	Rubber seal [KB3411JW]	1	AM
6- 12	XOTWW40P10000	M	Screw	4	AA
6- 13	LANGFB020MRP0	M	Backsplash brace	1	AQ

## PACKING



NOTES

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